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Environmental Assessment

Auggie Creek Restoration/Fuels

Seeley Lake Ranger District, Lolo National Forest
Missoula County, Montana



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Summary

The Seeley Lake Ranger District of the Lolo National Forest is proposing a restoration project designed to restore forest conditions by developing a diverse mix of vegetative composition and structure that better represents historical conditions for the area. The restoration treatments would reduce the risk of bark beetle infestations and reduce the risk of sustained high intensity wildfire in the wildland-urban interface. The project also proposes to integrate restoration with recreation enhancements such as improving the visual setting of the existing trail system in the Auggie Creek treatment area and improving recreation opportunities. Additional project objectives include restoring, maintaining, and recruiting old-growth and mature, low-elevation forests. The project area consists of two treatment areas which are situated in Missoula County, ½ and 3 ½ miles east of the community of Seeley Lake, Montana. A map of the proposed project can be found on page 10 (Map 1).

Activities proposed in this project include: restoring forest conditions on about 965 acres using commercial and noncommercial treatments; planting western larch and Douglas-fir on about 44 acres to enhance species diversity; maintaining approximately 10.65 miles of existing roads under Forest Service jurisdiction and 1.8 miles of national Forest System trails; implementing BMPs where necessary including where Road 477 crosses Morrell, Swamp and Trail Creeks; constructing approximately 0.59 miles of temporary or short-term specified roads, which would be decommissioned following completion of the vegetation management activities; storing or decommissioning 1.78 additional miles of road; allowing about 1 mile of road which is currently closed to public access and naturally restored (revegetated and not driveable) to remain in its current condition; replacing 2 aquatic barrier culverts; and, conducting ground-based noxious weed herbicide treatments along approximately 12.45 miles of NFS roads and trails and disturbed soil such as landings and the stored or decommissioned roads. Additionally, interpretative signing would be installed at various points in the project area to share information about the restoration activities.

The purpose of this Environmental Assessment (EA) is to comply with the National Environmental Policy Act (NEPA) and to provide sufficient evidence and analysis for the deciding officer, the Seeley Lake Ranger District, District Ranger, to determine whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI)¹.

Acknowledging that any human activity has some affect on our environment, the EA analysis indicates the interdisciplinary team found no unresolved or significant issues. For this reason the Auggie Creek Restoration/Fuels Draft Finding of No Significant Impact (FONSI) was prepared and presents our preliminary conclusions regarding whether an EIS is necessary and the potential for significant effects.

¹ 40 CFR 1508.9

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Chapter 1 Purpose and Need for Action

Introduction

The purpose of this Environmental Assessment (EA) is to comply with the National Environmental Policy Act (NEPA) and to provide sufficient evidence, analysis and basic conclusions for the deciding officer, the Seeley Lake Ranger District, District Ranger Tim Love, to determine whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI)². This EA provides a “hard look” at the question of whether the consequences of the proposed action, given the intensity and the context of the impacts, are “significant.” **All numbers throughout this EA are approximations.**

The resource reports cited in this EA and additional project documentation can be obtained from the Lolo National Forest’s website at <http://www.fs.fed.us/r1/lolo/projects/>. The project file is available at the Seeley Ranger District. The abbreviation “Ibid” is used to indicate the information cited came from the same place as the previous citation.

Need for the Proposal

The Forest Service is proposing this project in order to:

Restore the natural condition, form and function in the landscape and place the ecosystem on a more natural trajectory by developing a diverse mix of vegetative composition and structure.

- ◀ Restoration would reduce the risk of bark beetle infestations and reduce the risk of sustained high intensity wildfire in the wildland-urban interface (WUI).

Provide for diverse recreational opportunities.

- ◀ Improve the visual setting of the existing trail system.
- ◀ Improve recreational activities.
- ◀ Integrate restoration with recreation enhancements.

Restore, maintain, and recruit old-growth and mature, low elevation forests by:

- ◀ Increasing vigor of seral western larch species and ponderosa pine.
- ◀ Increasing the likelihood of regenerating / recruiting western larch and ponderosa pine.
- ◀ Restoring historic structural and spatial patterns which, in turn, would reduce the likelihood of stand-replacing fire.
- ◀ Restoring low intensity fire to stands after vegetative treatments

² 40 CFR 1508.9



Unit S8 represents many of the units which are heavily stocked with tight crowns and a large ladder fuel component. Wildfires burning in areas like this would likely be mixed to high severity fires with possible severe fire effects (Fire and Fuels Report p. 10).

Figure 1 Unit S8 Photo

The Lolo National Forest Land Management Plan provides guidance that supports these activities. Public comments also support implementing the activities proposed in the Auggie Project (Appendix C). While there is clearly support for implementing the activities identified in this proposal there is an equally compelling need, noted by the public and scientific literature to support conducting them in a manner that minimizes potential impacts to other resources in the project area (Appendix C).

Public Involvement

The interdisciplinary team (IDT) has been working closely since early spring 2008 with the Lolo Forest Restoration Committee, which is a subgroup of the Montana Forest Restoration Committee (MFRC), on this project. The MFRC, which formed in January 2007, is made-up of 34 representatives of conservationists, motorized users, outfitters, loggers, mill operators, state government, and the Forest Service. This diverse committee's mission is to implement the 13 Restoration Principles that they developed through their work together in 2007. More information about the Restoration Committee and Principles can be found at their website at <http://www.montanarestoration.org/>.

In addition to working with the MFRC, the Seeley Lake District Ranger met on site with some interested parties from the logging industry early on to discuss the proposed project's viability given the recent declines in the timber market.

The Auggie Project was listed in the April 2008 through the current Schedule of Proposed Actions. A scoping letter with the proposed actions was mailed to 60 individuals and organizations including agencies and Tribes on July 11, 2008 and was posted on the Forest web site. Comments were requested by August 12, 2008; however, comments were considered no matter when they were received.

Six individuals and organizations commented on the scoping letter (Appendix C). Considering all comments received the interdisciplinary team developed a list of preliminary issues to consider.

This Environmental Assessment and a Draft Finding of No Significant Impact will be made available to the public for a 30-day comment period.

Issue Resolution

Based on public comments received during scoping, preliminary issues were identified as potential undesirable effects that might result from implementing the proposal. Further analysis and project development addressed comments either by: (1) modifying the proposed action and its resource protection measures, (2) incorporating the comment in the analysis, or (3) explaining why the comments do not warrant further agency response. Because all the comments on the proposal could be addressed in the three manners listed above, no additional alternative(s) were analyzed. After project development, analysis, and with consideration of all of the public comments the interdisciplinary team found no unresolved or significant issues.

Appendix C shows the comments received during the scoping period and the disposition or summary of analysis of those comments.

Chapter 2 Alternatives

Alternatives Considered In Detail

Alternative 1 – No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. No Auggie Project activities would be implemented to accomplish project or Forest Plan goals. This alternative is analyzed in detail in each of the resource reports which are available on the Lolo National Forest's web site, and the analysis is summarized in this document.

Alternative 2 –Proposed Action (see Map 1)

After public input and additional field work the proposed action sent out during scoping was slightly modified by refining treatment unit boundaries and adding temporary road to enhance feasibility from an implementation standpoint. Site-specific resource protection measures were also added to Alternative 2 to respond to public comments and enhanced field knowledge.

Alternative 2 includes the following activities (all numbers are approximations): restoring forest conditions on about 965 acres using commercial and noncommercial treatments; planting western larch and Douglas-fir on about 44 acres to enhance species diversity; maintaining approximately 10.65 miles of existing roads under Forest Service jurisdiction and 1.8 miles of national Forest System trails; implementing BMPs where necessary including where Road 477 crosses Morrell, Swamp and Trail Creeks; constructing approximately 0.59 miles of temporary or short-term specified roads, which would be decommissioned following completion of the vegetation management activities; storing or decommissioning 1.78 additional miles of road; allowing about 1 mile of road which is currently closed to public access and naturally restored (revegetated and not driveable) to remain in its current condition; replacing 2 aquatic barrier culverts; and, conducting ground-based noxious weed herbicide treatments along approximately 12.45 miles of NFS roads and trails and disturbed soil such as landings and the stored or decommissioned roads. Additionally, in response to a comment made by the Montana Forest Restoration Committee (MFRC) relative to Restoration Principle 11 (<http://www.montanarestoration.org/>), interpretative signing would be installed at various points in the project area to share information about the restoration activities.

The road storage and decommissioning and weed spraying are mitigation or resource protection measures to offset potential effects of the vegetation restoration treatments and associated temporary road construction and would be completed only if the project is implemented. This point is made because other components of this proposal, such as replacing the 2 aquatic barrier culverts where Road 477 crosses Swamp and Trail Creeks, is not included in this proposal as mitigation and could be completed if additional funds separate from those generated by selling the wood products are available.

These actions would occur between 2009 and 2019 and are further described below.

Vegetation Restoration

The following vegetation treatments would occur on about 965 acres (see Table 1):

- ◀ Improvement cutting – a combination of thinning from below and crown thinning to remove the smaller excess tree stocking of merchantable sized trees (6-7 inches diameter at breast height and larger).
- ◀ Group tree selection – scattered ¼ to 2 acre cuttings with underburning or whole tree yarding to prepare the areas for planting of western larch and Douglas-fir. This method regenerates uneven-aged stands by removing trees and establishing new age classes in small groups.
- ◀ Salvage beetle-killed trees – harvesting primarily dead merchantable sized ponderosa pine and lodgepole pine while retaining snag habitat and future down woody debris.
- ◀ Understory slashing – non-commercial hand-felling of excess understory trees to reduce ladder fuels (which can carry fire up into the trees' canopy from the ground), augment fuel conditions for the subsequent underburn, or to ensure excess understory seedlings and saplings are removed. Fifty trees per acre or more of the understory saplings per acre of the better growth forms of all species would be retained for structural diversity, wildlife screening, aesthetics, and future overstory. All understory trees underneath the crowns of late successional overstory would be removed to enhance vigor and reduce the risk of torching from fire.
- ◀ Precommercial thinning – non-commercial hand-felling of excess saplings and small pole-sized timber to control stand density and composition, reduce hazardous fuel conditions, reduce bark beetle risk, and reduce losses of residual trees to diseases.
- ◀ Underburning – intentionally lit and carefully monitored fire ignited under controlled conditions and allowed to burn within specified parameters. Would be used to return the ecological benefit of fire and to reduce fuels and/or prepare areas for tree planting or natural regeneration. Burning prescriptions include an acceptable mortality level for the remaining stand.
- ◀ Tree planting – in group selection areas western larch and Douglas-fir would be planted to enhance species diversity

In the commercial harvest units entire trees would be yarded to the landings (i.e., whole tree yarding or WTY), and tops, limbs, and other unmerchantable material would be piled for later treatment. The estimated volume to be removed from the commercial treatments is about 0.3 mmbf in the Mountain Creek treatment area and 1.3 mmbf in the Auggie Creek treatment area.

Table 1 – Proposed Vegetation Restoration Treatments

Units	Treatments	Logging System	Unit Acres
H11, 12, 14-17	Improvement cutting, group tree selection, slashing	Tractor	102
H13	Improvement cutting, group tree selection, slashing, and underburning	Tractor	44
Mountain Creek Total			146
H1 – H10	Improvement cutting, slashing, underburning	Tractor	225
S1 – S3	Underburning	n/a	254
S4 - S11	Slashing and underburning	n/a	171
T1 - T15	Precommercial thinning and underburning	n/a	169

Auggie Creek Total	819
Project Total	965

Interpretative signing would be installed at various points in the project area to share information about the restoration activities.

Road Work (see Maps 2 and 3)

Approximately 10.65 miles of existing roads under Forest Service jurisdiction and 1.80 miles of National Forest system trails would be maintained and used as haul routes. Best management practices (BMPs), including road reshaping, aggregate surfacing, drainage improvements, and sediment delivery control measures, would be applied in the course of road maintenance where necessary. Of the 12.45 miles of existing roads and trails to be used as haul routes, about 2.8 miles would require reconstruction in addition to the maintenance and BMP mitigation.

In order to access some treatment areas approximately 0.59 miles of temporary and short-term specified road (0.15 and 0.44, respectively) would be constructed (see Table 3), and as described in the resource protection measures (Table 6, #44) restored (i.e., decommissioned) after use.

Temporary roads would be constructed under the supervision of a timber sale administrator and for this project would be obliterated within one year following purchaser's use. They would be constructed in areas that are not as sensitive to road development such as on flat, well drained topography. Generally, less earth disturbance is required to construct a temporary road (Transportation Report p. 14). The utilization of these roads to shorten log skidding distances can result in less ground impacts. Temporary road miles are estimates.

Short-term specified roads would be used for a limited period of time for timber sale related activities and would then be obliterated. The use of these roads limits the undesirable long-term effects of road development and use. Short-term specified road construction is conducted under the supervision of an engineer and is based on a road design developed through an engineering process to avoid impacts to sensitive areas (Ibid).

Approximately 2.37 miles of road would be stored or decommissioned (1.78 miles and 0.59 miles respectively) by the end of the project related activities (Tables 2 and 3) as a mitigation/resource protection measure (Table 6, #s 44 and 45) for the timber harvesting to occur.

There is about 1.46 miles of road which is currently closed to public access and is naturally restored (revegetated and not driveable). These roads (NFS Rd. 36379 (49-50) = 0.17 miles, NFS 36386 (47-41) = 0.44 miles, and NFS Rd. 36389 (46a-48) = 0.85 miles) would remain in their current condition and would be designated as closed by natural recovery with a closure level 3DN. No treatments would be performed on these roads because they are currently considered to be in an environmentally benign condition. Land disturbances associated with additional restoration treatments would result in unnecessary resource impacts.

Table 2 - Roads to be Stored (Closure level *3S) – Mitigation/Resource Protection Measure

Route Number	Segment	Miles (approx.)
36384	35-36	0.43
36352	39-40	0.41
36381	46-47	0.45
36383	44-45	0.16
36386	34-41	0.28

Route Number	Segment	Miles (approx.)
36077	31-31b	0.05
Total		1.78

*3S -- Retain on NFSR system in long term storage (self-maintaining); generally up to approx. 20 years.

Table 3- New Road Construction to be Decommissioned (Closure Level *5)
Mitigation/Resource Protection Measure

Route Number	Segment	Miles (approx.)
Short-term Specified Roads		
TH3-A	23-25	0.2
TH3-B	24-26	0.08
TH8	16-17	0.06
TH7	13-14	0.1
Total		0.44
Temporary Roads		
TH2	48-49	0.05
TH11	37-38	0.06
TH14	42-43	0.04
Total		0.15
Grand Total		0.59

*5 - Decommission, remove from NFSR system following use for project implementation, road not needed for 40+ years

Aquatic Barriers Replacement Measures

Two aquatic-barrier culverts would be replaced with ones that would accommodate fish passage and 100-year flood flows in Section 31. One is located where FS Road 477 crosses Swamp Creek (culvert ID no. 1811) and one where it crosses Trail Creek (culvert ID no. 1246) (Map 3).

Because this work is not included in the proposal as needed mitigation to off-set the impacts of the other activities, it would only be implemented if additional funding were available above what is generated by the sale of wood products in this project. Replacement of these barriers would restore access to approximately 8.6 miles of stream and associated fish habitat within the project area.

Ground-Based Noxious Weed Herbicide Treatments

Following the 2007 Weeds EIS and Decision³, ground-based noxious weed herbicide treatments would be conducted along approximately 12.45 miles of NFS roads and trails and disturbed soil such as landings and the 2.37 miles of stored or decommissioned roads shown in Tables 2 and 3. This is mitigation (Resource Protection Measure #47).

³ This EA tiers to analysis in The Final Environmental Impact Statement: Integrated Weed Management on the Lolo National Forest, December 2007. The document is also incorporated by reference, as appropriate, throughout this EA.

Timing of Activities

The timing of activities in the implementation of this proposed project is critical.

In the Mountain Creek Treatment Area, activities are restricted to winter conditions as described in Resource Protection Measure #1 (Table 6) in order to protect soils.

In the Auggie Creek Treatment Area timing restrictions are needed to protect soils, to ensure protection of a known goshawk nest, and to minimize conflicts with cross-country ski trail users particularly during the OSCR (Over Seeley's Creeks and Rivers) Ski Race, which is an important recreation event held annually in the project area. Auggie Creek Treatment Units (about 236 acres) affected by Resource Protection Measure #3 (to minimize recreation conflicts with skiers) and #20 (ensure protection of known goshawk nest) are shown in Table 4 below and Map 1. Auggie Creek Treatment Units (about 583 acres) affected by Resource Protection Measure #3 but not #20 are shown in Table 5 and Map 1. In this context, "activities" refers to both commercial and noncommercial vegetation treatments (except underburning) and the road work within the treatment areas. Additional information regarding the timing of activities related to other resource concerns can be found in Table 6.

Table 4 - Auggie Creek Treatment Area Units in which Activities may not occur between 10/15 and 2/15 or between 4/15 and 8/15 (Resource Protection Measure #s 3 and 20)

Unit	Proposed Vegetation Treatment
H1, H3 – H8, H10	Improvement cutting, slashing, underburning
S7, S10	Slashing and underburning
T4 – T9	Precommercial thinning and underburning

Table 5- Auggie Creek Treatment Area Units in which Activities may not occur between 10/15 and 2/15 (Resource Protection Measure # 3)

Unit	Proposed Vegetation Treatment
H2, H9	Improvement cutting, slashing, underburning
S1 – S3	Underburning
S4-S6, S8, S9, S11	Slashing and underburning
T1-T3, T10 – T15	Precommercial thinning and underburning

Resource Protection Measures

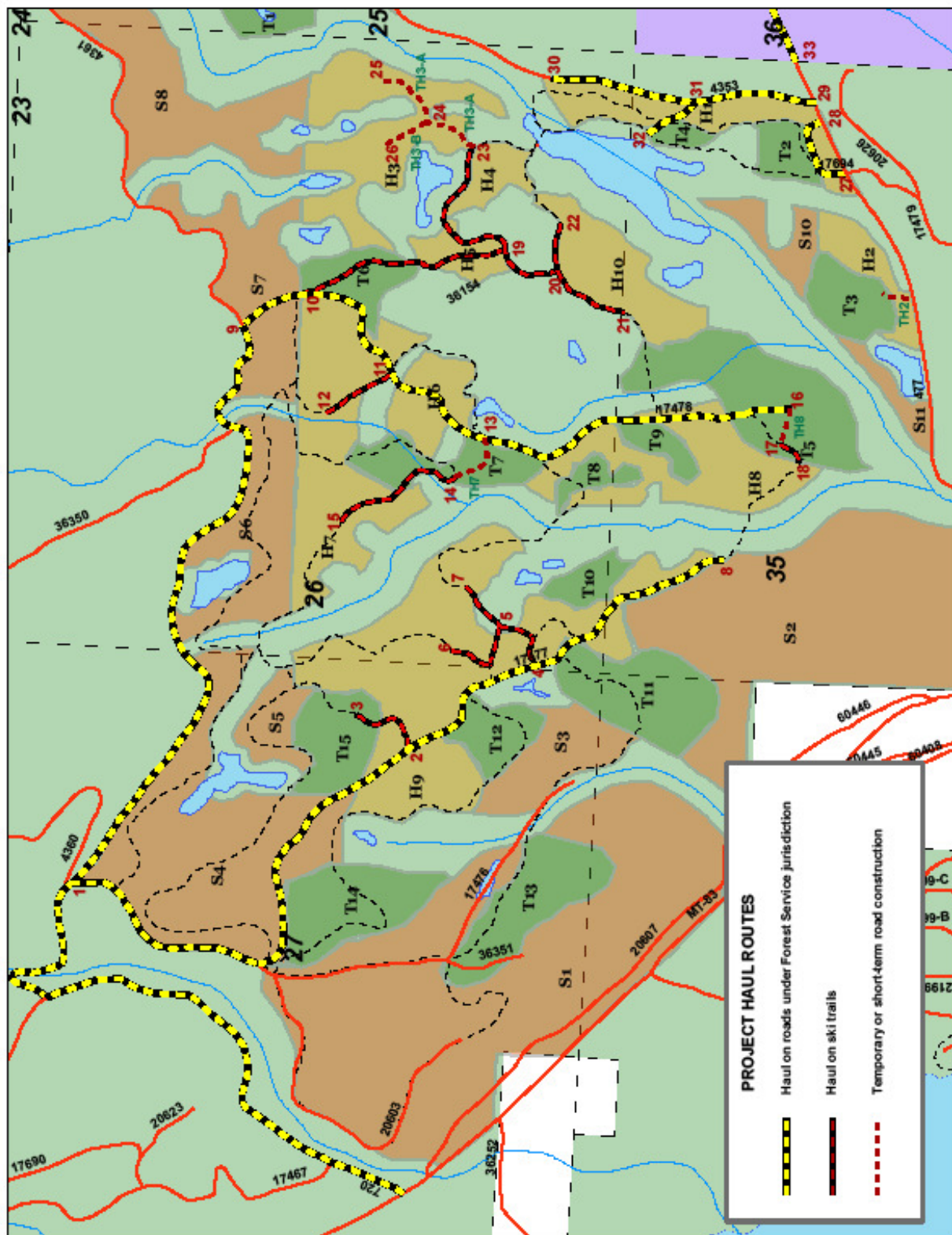
The resource protection measures mentioned above, and additional resource protection measures are explained in this section.

As mentioned under the Public Involvement section, the IDT carefully considered all of the comments received on the proposed action and identified issues. One way issues were resolved was by modifying existing design criteria or adding additional site-specific protection measures that will reduce to negligible or eliminate the unintended effect. These measures are referred to inclusively as **resource protection measures** in this document.

Appendix C shows how resource protection measures were used and developed in Alternative 2 to address comments made during scoping.

These resource protection measures are objective based. This means that the desired condition or the condition to be avoided will be described. Ways that this objective can be met are also described in the table; however, another method, determined to be equally or more effective in meeting the mitigation objective by a resource specialist and approved by a line officer, could also be used.





Map 2 – Auggie Creek Treatment Area Haul Routes

Table 6 – Resource Protection Measures

Primary Resource	Resource Protection Measure Objective	Resource Protection Measure*	Units/Location	Resource Protection #
Soils	To maintain soil productivity and reduce detrimental disturbance	Operations will be restricted to “winter conditions”. Winter conditions guidelines are as follows: <ul style="list-style-type: none"> • 0 inches of frozen soil -- Need 10 inches of settled snow. • 2 inches of frozen soil. -- Need 6 inches of settled snow. • 4 inches of frozen soil -- No snow cover If necessary, pre-pack snow on designated routes before work commences. This allows soil to freeze and the snow road to solidify.	Mountain Creek Treatment Area	1
Soils Aquatics	“	“Non-winter condition” work will occur only when soil is dry. Stop work if trenching or mud is detected, or if you can form a fairly strong clod with the soil in the topmost 6 inches.	Auggie Creek Treatment Area	2
Soils, Wildlife, and Recreation	To maintain soil productivity and reduce detrimental disturbance, to ensure protection of known goshawks, and to minimize recreation conflicts with ski trail users	While work in this treatment area can occur when the winter conditions stated above in #1 are met or when dry season conditions exist as stated above in #2, work <i>will not</i> occur between 10/16 and 2/14.	Auggie Creek Treatment Area	3
Soils	To ensure adequate woody material is left on the ground for nutrient cycling	Conduct underburning before slashing rather than afterwards.	Units S4-S8	4
Soils	To protect soils and residual trees	Conduct precommercial thinning in Units T1 – T15 after initial round of underburning in Units S1 – S11 and H1 – H9 is completed.	Auggie Creek Treatment Area	5
Recreation	To keep the public informed and reduce safety concerns	Notify the recreating public if there will be area, road, or trail closures due to the harvest activities that will be occurring in the project area. Use signing, local newspaper, and Forest Web Page.	Project area	6
Recreation	To reduce possible impacts to cross-country skiers	All ski trails and roads used as skid trails will be left in a slash free and smooth condition at the end of the project.	Auggie Creek Treatment Area	7
Recreation	To reduce possible impacts to snowmobile riders	<u>12/1-4/15 trail/road restriction</u> Open for both logging traffic and snowmobiles. Weekdays and weekends 24 hours/day - Mixed Use and signed as such. 20 MPH Speed limit	Snowmobile trails: #1, Rd 477 (Sec. 31,35,36); and #3, Rd 4353 (Sec. 24, 25, 35)	8

Primary Resource	Resource Protection Measure Objective	Resource Protection Measure*	Units/Location	Resource Protection #
Recreation	“	<u>12/1-4/15 trail/road restrictions</u> Weekdays - Open for snowmobiles and closed to logging traffic 6:00 P.M.-3:00 A.M. Open for logging traffic and closed for snowmobiles 3:00 A.M – 6:00 P.M. Weekends - Open for snowmobiles closed for logging traffic 6:00 P.M. Fri.- 3:00 AM Mon.	Snowmobile trail #3, Rd 720 (Sec. 27 &28)	9
Visuals and Soils	To protect the visual quality within scenic corridors and viewsheds and limit soil disturbance	Where possible locate landings in old harvest units beyond view of the trail system.	Auggie Creek Treatment Area	10
Visuals	To protect the visual quality within scenic corridors and viewsheds	Maintain pockets of untreated areas to provide view diversity and buffer trail use.	Auggie Creek Treatment Area	11
Visuals	“	Leave approximately 15-20% of the small understory trees in all units for visual variety.	All Units	12
Visuals	“	If vegetation clearing is needed at landings, shape edges to mimic natural patterns and openings.	All Units	13
Visuals	“	Cut tree mark all units or mark units in such a way that no long-term timber marking paint is visible from the main viewpoints within the project area.	All Units	14
Visuals	“	Leave trees in all units will be left in irregular patterns in an effort to mimic the natural vegetation patterns characteristic of the area.	All Units	15
Visuals	“	Unless unsafe, all stumps will be cut low (less than 6 inches) within 50 feet of the property boundaries, trails, roads and trailhead.	All Units	16
Visuals	“	Treatment unit boundaries shall be marked with a butt stripe only. Paper boundary markers and ribbons may be utilized during timber sale implementation but shall be removed immediately afterward.	All Units	17
Wildlife Aquatics	To eliminate potential impacts to wildlife species to become food habituated	Food and other garbage associated with all activities on this project must be stored in a vehicle or other bear-proof container Specific direction is given in Forest Order F06-003-LOLO-D6.	Project area	18

Wildlife	To eliminate potential impacts to nesting birds of local concern including eagles, falcons, goshawks, and owls if they are detected	Contact wildlife biologist so operations can be modified to provide adequate protection; this might include addition of nest site buffers or the imposition of activity timing restrictions.	All Units	19
Wildlife	To ensure protection of known goshawks	No treatment-related activities would occur from April 15 through August 15 (egg laying through fledging) within a 420-acre area centered on the active goshawk nest. In addition, a 40-acre no treatment buffer would be placed around each active nest area to provide long-term nesting habitat.	Auggie Creek Treatment Area	20
Wildlife	“	During burning operations, the Wildlife Biologist will coordinate with Fire personnel to ensure that high quality, large diameter snags (especially western larch and ponderosa pine) are protected through buffering, avoidance, or reducing duff accumulations at the base of these snags.	All Units	21
Wildlife	To retain small diameter trees to meet multiple resource objectives	During slashing and burning operations the wildlife biologist will coordinate with fire and silviculture personnel to ensure that retention of small diameter trees meets multiple resource objectives. This may be accomplished through buffering, avoidance of selected dense patches, or other design criteria at the time of implementation.	All Units	22
Wildlife	To retain large diameter trees for habitat and to address public concerns	Live or dead ponderosa pine or western larch 21 inches diameter at breast height (dbh) or greater would not be designated for removal except where required for the safe and efficient conduct of logging (e.g., for skid trails, landings, or roads that cannot be located elsewhere).	All Units	23
Wildlife	“	When possible landings should be located so that snags 21 inches diameter at breast height (dbh) or greater would not need to be felled for safety.	All Units	24
Wildlife	To reduce potential impacts to T, E, S species	If any threatened, endangered, or sensitive species are located during project layout or implementation, a wildlife biologist will be notified. Management activities would be altered, if necessary, so that proper protection measures can be taken. Timber sale contract provisions that require the protection of threatened, endangered and sensitive species would be included in the timber sale contract.	All Units	25

Vegetation	To protect ponderosa pine and western larch regeneration, aspen trees, and residual trees and snags	Use standard timber sale contract clauses, which address resource and residual timber protection by requiring directional felling, pre-approved skid trails and landings, and logs yarded with leading edge free of the ground.	All Units	26
Vegetation and Soils	To protect residual stands and maintain forest climate	Prescribed fire treatment prescriptions should be designed to protect at least 80 percent of the target residual overstory in harvested units.	Units H1-H9 and H13	27
Vegetation and Soils	To protect residual stands and maintain soil productivity	Design burning prescriptions so that underburning affects 30% or less of the area and no more than 60%.	Units S4 - S8	28
Aquatics	To protect aquatic resources by reducing potential sedimentation from roads or harvest activities	Montana Best Management Practices (BMPs) for Forestry would be met as a minimum on roads used for accessing treatment areas, including provisions of the Streamside Management Zone Law. All activities would comply with Lolo NF Best Management Practices.	Haul routes	29
Aquatics	“	Prior to timber haul, all BMP and associated Soil and Water Conservation Practices designed to control surface drainage from roads would be in place on road segments to be used and would be maintained to ensure functionality. All BMPs would be inspected in accordance with monitoring requirements, which are typically at the end of each operating season to assure their ability to protect water quality during spring snowmelt runoff season. Additionally all BMPs would be functional at the close of timber sale activities.	Haul routes	30
Aquatics	“	Slash filter windrows would be placed on relief culvert outlets that are within 300 feet of a waterway.	Haul routes	31
Aquatics	“	Slash filter windrows would be applied to all stream crossings on haul routes BEFORE blading, haul and other project activities occur in order to mitigate 85% or more of the effects of road blading and increased sediment from haul traffic. Slash filter windrows will be maintained during and after haul to ensure effectiveness.	Haul routes	32
Aquatics	“	INFISH will be applied to assure Riparian Management Objectives are maintained.	All Units	33
Aquatics	“	Montana Streamside Protection Act (SPA) 124 Permits would be obtained for any activity that would disturb stream channels. U.S. Army Corps of Engineers 404/401 Permits would be obtained for any activities involving stream channels and/or wetlands.	All Units	34

Aquatics	“	Boundaries of wetlands and RHCAs would be flagged prior to activities to exclude ground-based equipment and other activities.	All Units	35
Aquatics	“	During project layout, field personnel would identify wet areas and/or stream channels, and notify appropriate water and/or fisheries specialist and botanist regarding any special management requirements that might be required.	All Units	36
Aquatics	“	Erosion control measures (straw bales, wattles, silt fences, hydro mulching, seeding with approved mix, water barring etc.) would use only certified weed-free products and would be used where necessary and remain in place before and during ground disturbing activities. To ensure effectiveness, erosion control measures would remain in place and functional until disturbed sites (roads, culverts, landings, burn piles etc.) are stabilized, typically for a minimum period of one growing season after ground disturbing activity occurs. This would require regular inspection and may require maintenance. Additional inspections and maintenance would occur following high rainfall events and prior to fall and spring runoff to ensure their effectiveness.	All Units, haul routes, and roads	37
Aquatics	“	Road work would comply with all BMP standards. Work would be conducted during dry conditions, either naturally or via a clear water diversion to further minimize sediment impacts.	Short-term specified roads	38
Aquatics	“	Sediment buffering devices such as slash filter windrows would be installed below all fill slopes within 300 feet of streams or drainage crossings.	Temporary roads	39
Aquatics	“	Snow drainage holes (areas where drainage can flow through road-side snow berms and off the snow-packed road surface) will be designated prior to winter haul, and kept open throughout the duration of winter hauling.	Mountain Creek Treatment Area Haul Routes	40
Aquatics and Soils	To protect aquatic resources by reducing potential sedimentation from roads and harvest and advance soil recovery	Where appropriate, skid trails would be water-barred and seeded with approved Lolo NF seed mix with minimum scarification. When possible green slash would be scattered across their surfaces.	Skid trails	41
Aquatics	“	Following burning, landings would be ripped (if necessary), seeded with approved Lolo NF seed mix, and covered with green slash and woody debris within one season following purchaser's use.	Landings	42

Aquatics	“	Coarse woody debris would be kept on site at 5 – 20 tons/acre to meet objectives for long-term soil productivity as specified within “Lolo National Forest Down Woody Material Guide”(USDA, 2006)	All Units	43
Aquatics	“	Decommission - Decommission, remove from NFSR system, road not needed for 20 – 40+ years. Water-bar or intermittent out-slope. May recontour along the road. Restore all watercourses to natural channels and floodplains. Scarify if needed no more than 6 inches deep, seed and fertilize. May scatter slash on road for soil recovery at 5 – 20 tons/acre. Treat noxious weeds.	0.59 miles (listed in Table 3)	44
Aquatics	To assure the roads are hydrologically stabilized, minimizing potential impacts to aquatic resources	Store - Retain on NFSR system in long term storage (self-maintaining); generally up to approx. 20 years. Water-bar or intermittent out slope. Restore all watercourses to natural channels and floodplains. Rip 6-12 inches, seed and fertilize. May scatter slash on road. Treat noxious weeds.	1.78 miles (listed in Table 2)	45
Aquatics	“	Fish biologist or hydrologist would be notified prior to stream culvert removals, as appropriate, during road decommissioning/storage and of all stream crossing replacements to allow them the opportunity to be present to ensure appropriate alignment and reshaping of the stream channel, bank-full width, floodplain, step-pools and grade control structures, transplants, etc.	Decommissioned/ tored roads	46
Weeds	To Reduce or Eliminate the Introduction or Spread of Weeds and impacts of herbicides treatment	Conduct ground-based noxious weed herbicide treatments along approximately 12.45 miles of NFS road and disturbed soil such as landings, and the 2.37 miles of stored or decommissioned roads in order to mitigate potential weed spread from harvest.	Haul routes, landings and stored and decommissioned roads.	47
Weeds	“	Include in all timber sale contracts the standard Contract Provisions: C/CT6.351 (or equivalent) – Washing Equipment: This clause requires the purchaser to clean all off-road equipment before moving into project area so that weed seeds are not spread.	Project area	48
Weeds	“	Weed treatments will tier to Lolo National Forest Integrated Weed Management Plan (USDA Forest Service, 2007), including approved herbicides, treatment strategies and mitigation measures. Implement mitigation measures 1 – 48 (starting on page 28 of Lolo National Forest Integrated Weed Management EIS 2007). These include evaluating the weed site for sensitive plant habitat,	Haul routes, landings and stored and decommissioned roads	49

		implementing Region 1 weed prevention practices and BMPs, revegetating sites with a seed mix that includes native species, following herbicide application law, and posting signs where herbicides are applied.		
T, E, S Plants	To minimize impacts to native flora	If plants of local concern, such as rare or sensitive plants or species of interest or concern, are detected within the project area, the Forest botanist would be contacted so protective measures may be revised or newly prescribed. This could include additional buffers or the imposition of activity timing restrictions.	Project Area	50
T, E, S Plants	“	Exclude ground-based equipment and other activities from within 200’ of the pond near Units S11, T3 and H2 because it is potential <i>Howellia aquatilis</i> habitat.	Units S11, T3 and H2	51
Air	To assure air quality standards are met	All prescribed burning for this project would be accompanied by an approved prescribed burn plan and would be managed and conducted by Seeley Lake Ranger District Fire personnel.	Prescribed burning including landing and pile burning	52
Air	“	Fire management staff would generate public notice information just prior to burn days.	Project area	53
Air	“	Prescribed burning ignition days would be regulated by the ID/MT Airshed group and Missoula County Air Quality Regulations for Airshed 3B to mitigate smoke effects.	Project area	54
Heritage	Protect cultural and heritage resources	If previously unknown heritage resources are encountered during implementation of the project, activities will be halted and the Forest Archaeologist will be notified immediately.	Project area	55
Heritage	“	A 50-meter no treatment buffer will be placed around archeological site 24MO0127.	Auggie Creek Treatment Area	56

* A resource protection measure may be a design feature that was identified before the project was developed to eliminate or avoid potential undesired effects, or it may be a project-specific design feature or mitigation measure developed to minimize or eliminate a known potential effect of this particular action. Another method, determined to be equally or more effective in meeting the resource protection measure a resource specialist and approved by a line officer, could be used.

Monitoring

The following monitoring would be included as part of the proposed action. In addition, a collaborative monitoring protocol is being developed by this project's interdisciplinary team with the Lolo Restoration Committee (see Project File) for vegetation and wildlife, soils, and down woody debris including pre- and post-treatment sampling. In addition, whenever possible coordination with other stakeholders would occur; including University of Montana researchers/faculty/graduate students, to do multiparty monitoring of the effects of timber harvest, fuel reduction effectiveness, road decommissioning, and the ecosystem maintenance burn effectiveness. Additional items of monitoring are included below.

Vegetation

The evaluation of vegetation management would be based on criteria outlined by Forest Plan monitoring items 3-1 through 3-16 (USDA, 1986).

Silvicultural prescriptions for each unit would require that Lolo National Forest Plan standards be met. A certified silviculturist would assure compliance with the prescriptions during sale preparation, contract administration, and post-harvest activities including prescribed fire. Timber sale administrations would monitor contractor performance of snag retention, residual tree protection, down woody debris retention, etc.

The stands in MA21 (Auggie Creek treatment area) had baseline stand exam data collected in 2008 according to a protocol developed specifically to assess old-growth stand structure. That protocol or equivalent will be conducted post-treatment to assess the effects of the treatments. It is possible that the Regional Office tree measurement group would conduct the sample, using pre-treatment sampling and post-treatment re-measurement of established plots as part of Regional old-growth monitoring.

Reforestation surveys would be conducted in group tree selection openings (Mountain Creek treatment area) and any additional openings created as a result of bark beetle-caused mortality, prescribed fire, or other disturbances. Artificial regeneration of western larch and natural regeneration of other conifer species would be monitored.

Wildlife

The known goshawk nest stand and adjacent area would be monitored annually from 2009 through 2013 to determine if goshawk use/presence is impacted during and after project implementation.

Hydrology and Fisheries

The following activities would be monitored: road and timber BMPs, Riparian Habitat Conservation Area buffers, road decommissioning, and road-stream crossing improvements (see Hydrology Report p. 41).

Threatened, Endangered, and Sensitive Plants

Areas that burn hotter than intended and create localized high intensity burn areas where noxious weeds may have an establishment advantage over native plants should be monitored and seeded with native seeds if needed.

To minimize indirect impacts of weed spread through slash piles, piles should be monitored for noxious weed establishment and seeded with native seeds if needed.

Soils

Traditional monitoring looks at soil disturbance from timber harvest operations. Ongoing monitoring on the Lolo NF uses the National Soil Monitoring Protocol (USDA 2008b, in press) that focuses on qualitative estimates of soil disturbance. For this project, monitoring would focus on quantitative characteristics that are easy to use and would supplement recent efforts on the Lolo NF to understand the link between harvest disturbance and soil function on a site-specific basis.

Monitoring would be done at the Mountain Creek plantation plots established during the initial site survey. Infiltration using minidisk infiltrometer, groundcover percentage, coarse wood (Lutes et al 2003), soil temperature, soil moisture, and soil respiration would be determined along 50 foot transects located at 6 plots- the same locations used for pre-project monitoring detailed above. These measures would be used to compare differences between harvest and burning, and harvest only treatments. This will serve as a case study of harvest and burning effects within old plantations. Monitoring would commence from one to three years following harvest.

Noxious Weeds

The effectiveness of the weed treatments would be monitored for three years following initial application to identify new weed infestations along roads or the need for additional treatments. If new infestations were identified, plants would be treated with herbicides or hand-pulled.

Compliance with contract requirements regarding herbicide treatments would be monitored by the timber sale administrator.

Fire, Fuels, and Air Quality

All prescribed burning would follow approved prescribed burn plans and would be implemented so that every effort is made to achieve air quality standards and allow for good smoke dispersion. Air quality would be monitored and evaluated during the burning activities and during Forest Plan monitoring.

Burn plans and detailed burn prescriptions would be developed with input from a certified silviculturist. Fuel moisture conditions would be monitored prior to burning to ascertain that the burning window is within prescription.

After prescribed burning is completed, the burned units would be monitored to determine if post-burn objectives such as those for reducing fuels, site preparation and large woody debris retention, wildlife habitat, insect and disease control, species manipulation were met.

Chapter 3– Environmental Effects

This section provides a summary of the direct, indirect and cumulative effects of the proposed action and the no action alternative. This section briefly provides the information and analysis that is necessary for the District Ranger to determine whether to prepare a finding of no significant impact or an environmental impact statement⁴. This section is intentionally concise⁵. The associated Auggie Creek Restoration/Fuels Draft Finding of No Significant Impact (FONSI) presents our preliminary conclusions regarding whether an EIS is necessary and the potential for significant effects. Additional information, including existing conditions, methodology for analysis, the determination of the effects analysis boundaries, and more details of the effects analysis are contained in the individual resource reports which are available online at <http://www.fs.fed.us/r1/lolo/projects/index-auggie-fuels.shtml> or in the Project File located at the Seeley Lake Ranger District.

The Council on Environmental Quality (CEQ), whose responsibility it is to coordinate federal environmental efforts and work closely with agencies and other White House offices in the development of environmental policies and initiatives, provided guidance to federal agencies on the consideration of past actions in cumulative effects analysis⁶. CEQ stated that “NEPA is forward looking, in that it focuses on the potential impacts of the proposed action” and “generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historic details of individual past actions” (CEQ memo, page 2). Cumulative impact is defined in CEQ’s NEPA regulations as the “impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions...” (40 CFR 1508.7). CEQ has interpreted this regulation as referring only to the cumulative impact of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past, present, and reasonably foreseeable future actions (CEQ memo, page 2).

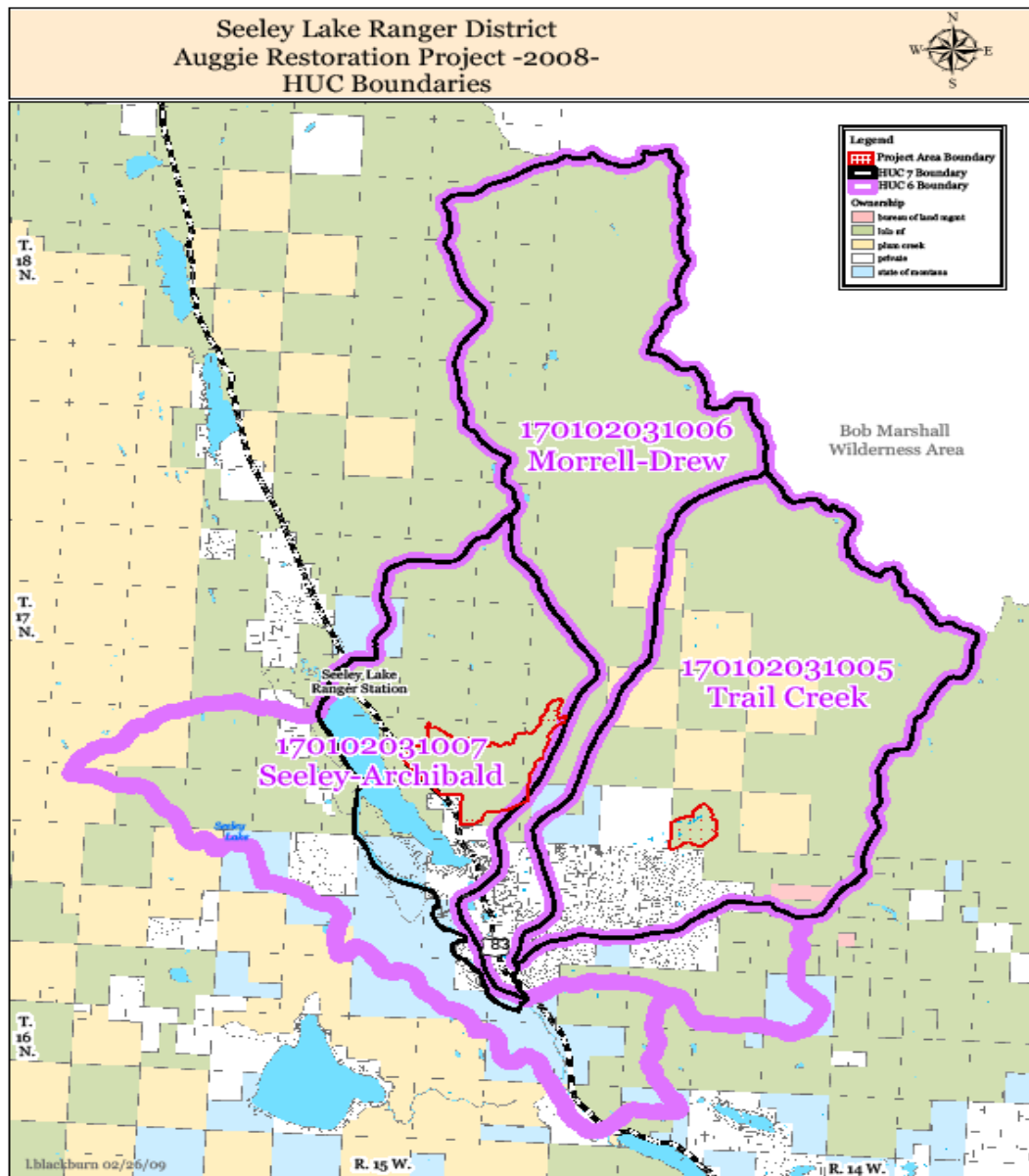
Consistent with the CEQ guidance, the past, present, and reasonably foreseeable actions were considered for analysis of cumulative effects where appropriate for each resource (Resource Reports). Past actions considered in cumulative effects analysis include those that contributed to establishing the baseline conditions of the project area today. A comprehensive list of past and present activities is provided in Appendix D. Table D-1 provides a summary of activities that were considered in the cumulative effects analyses and include those that occurred in the past, are still occurring, may occur, or may continue for an undetermined amount of time into the future.

The following resource reports display the effects of the alternatives at varying scales. A point of clarification is needed regarding hydrologic unit codes (HUC). References are made to both 6th code and 7th code HUCs in the resource reports. While these terms are used inconsistently in the reports, the actual HUCs used in all of the analyses are two 7th code HUCs (Morrell-Drew and Seeley-Archibald) and one 6th code HUC (Trail Creek) (see Map 4). The reason why 7th code HUCs were used was because the full 6th code HUCs included area that would not be affected by the proposed action because these areas lie in different watersheds; had these areas been included during the analysis, the effects of the proposals may have been diluted.

⁴ 40 CFR 1508.9

⁵ 40 CFR 1508.9(a)

⁶ CEQ Memorandum to the Heads of Federal Agencies regarding Guidance on the Consideration of Past Actions in Cumulative Effects Analysis, June 24, 2005.



Map 4 - Auggie Project HUC Boundaries

Soils

This information is summarized from the Soils Report which is available on the Lolo National Forest web site. Specific resource protection measures related to soils are described in Table 6.

Environmental Consequences

Alternative 1 - No Action

No adverse impacts to soils would occur. Recovery of existing impacted soils would continue through natural means (e.g., freeze/thaw cycles, root penetration into compacted soils, etc). Litter and duff accumulations would continue to increase, unless removed by wildfire. Overall, trends towards increased soil productivity on those units with existing levels of detrimental soil disturbance would occur, although gradually (Soils Report p. 9).

Alternative 2 – Proposed Action

The project was designed to minimize impacts and thus would not have long-term (greater than 30 years) adverse impacts on soil productivity. Soils in proposed harvest units would remain within Regional guidelines of no more than 15% areal extent of detrimental disturbance (USDA 1999). The project's major limitation to overcome was a lack of organic matter in past harvest units. Organic matter needed for soil function would be maintained by restricting burning to only 30% of the area for all the precommercial thinning units (T1-T15) and Units S4-S11 where old regeneration harvest impacts persist (169 and 171 acres, respectively). In addition, Units S4-S8 would be slashed after underburning to ensure adequate woody material is left on the ground for nutrient cycling.

Other units in the Auggie Creek treatment area are less sensitive to the planned project. Units S1-S3 have a mature forest canopy and pine grass habitat that supports a continuous burn (254 acres). Similarly, burning in the recent commercial harvest units (Units T8-T10) would have net beneficial effects (12 acres). Organic matter is conserved in the Auggie Creek harvest units by retaining a mature forest overstory and maintaining coarse wood in the range of 4-20 tons/acre based on Graham et al (1994) and Brown et al (2003) (USDA 2006).

In the Mountain Creek treatment units, mechanized harvest is limited to winter only operations due to extensive furrowing from past treatments (146 acres). Burning is excluded for most of the Mountain Creek units (102 acres), except unit H13 (44 acres) which borders resort development. Unit H13 is proposed for underburning in order to further reduce fuels and provide an opportunity to study the effects of the burning in contrast to adjacent Mountain Creek units that wouldn't be burned.

Direct and Indirect Effects

The activities proposed in Alternative 2 are primarily restorative and adhere to R1 soil quality guidelines for maintaining soil productivity (Ibid p. 14).

Net positive effects would result from re-applying fire in mature stands and leaving modest slash within old harvest units to increase soil recovery. The main negative effects from the project would be soil disturbance from tractor harvest, hotspots associated with prescribed fire, and temporary road building (Ibid p. 9).

While mechanical harvest would increase the amount of detrimental disturbance by compacting and displacing soils in the Auggie Creek harvest units, soils in proposed harvest units would remain within Regional guidelines of no more than 15% areal extent of detrimental disturbance (USDA 1999). In the Mountain Creek treatment area, disturbance from the harvesting would amount to less than 5% based on nearby monitoring in the Chain of Lakes and Clearwater Salvage sales (Archer 2008). In this area, the cumulative disturbance would still remain above

the 15% threshold. The hard scabble gravel and cobble soils would experience minimal compaction. Displacement of the thin topsoil is the greatest risk since fertility is concentrated in the top horizon for these glacial outwash soils. Erosion would be negligible since soils are excessively well-drained, slopes are primarily short-pitched and less than 35%, and storms causing surface erosion are uncommon (Ibid p. 9).

Effects on Organic Matter (Ibid p. 10)

The proposed activities' greatest potential impact to soils is related to maintaining adequate organic matter on these rocky infertile soils. These impacts depend on limiting topsoil removal as associated with timber harvest, leaving adequate woody residue and forest floor on the ground after burning, and improving current levels of organic matter on the surface in the old harvest units.

Predicted impacts to organic matter are based on field review of recently harvested and burned units completed during 1997-2001 (Units S1-S3). These areas were minimally impacted because harvesting occurred during winter conditions. The forest floor is still robust with down wood material from 4 to 10 tons/acres. The down woody material is within the Lolo NF's coarse wood guidelines (USDA 2006) of 4-20 tons/acre as recommended by Brown et al (2003) and Graham et al (1994) for moderating soil productivity while minimizing fuel hazards. Following the harvest and burning proposed in the Auggie project, coarse wood might be initially low, but natural tree mortality would supplement these levels in the future (Innes et al 2006, USDA 2006). The forest floor would be maintained with a 1-2 inch root type litter/duff mat that resists both harvest and burn disturbance using the recent harvest/burn results. Finally, the heavy retention of overstory trees buffers the site against diurnal temperature and moisture fluxes that improves growing conditions.

The most critical areas for organic matter are within the old harvest units. These effects are discussed below in cumulative effects.

Effects of Prescribed Burning (Ibid p. 11-12)

Burning would provide beneficial effects for all of the Auggie Creek treatment units by increasing nutrient flux and providing charcoal to supplement soil function. At least for the short term, mineral nitrogen (N) and phosphorus (P) would increase in availability (Choromanska and DeLuca 2002, Certini 2005) with long-term increases for nitrate (DeLuca and Sala 2006). The highest nutrient increases would be associated with the older stands (H units) that have higher fuel concentrations and have not been recently burned (Hart et al. 2005). Charcoal would ameliorate soil productivity with long-term carbon storage, increased water holding capacity and ion exchange capacity (DeLuca and Aplet 2008).

Burning could have negative impacts where high heat is generated in heavy fuels (e.g., slash piles). Sustained heat directed downward (i.e., high burn severity) can alter soil structure in addition to killing soil biota in the upper soil profile (Glassy and Svalberg 1983, DeBano 1998). Current recommended levels of coarse woody debris within the Auggie Creek H units use the optimum range for maintaining soil productivity while minimizing high fire severity risk (Brown et al 2003, USDA 2006).

Prescribed burning would have less risk for long-term adverse effects to soils where tree cover is maintained within all H units and S units. For this climate and habitat, tree cover moderates environmental conditions (Basko 1985) that can optimize soil function for quicker recovery after disturbance. Burning within the large openings with very young trees is higher risk since forest

floors are minimal and there is lack of coarse wood on the ground to ameliorate soil recovery. Further detailed discussion is within the cumulative effects discussion below.

Effects of Road Building and Log Landings (Ibid p. 12)

Effects on soils are long term where new temporary road is built since soils are excavated. Planned road decommissioning after activities would reclaim hydrologic function, although productivity would not return in the foreseeable future. Temporary roads would be returned to contour where soil hydrologic function would remain lower than natural forest for the short term and improve over time as vegetation returns (Luce 1997, Foltz 2003). Road decommissioning would occur within one season after the timber sale purchaser is finished logging. Additional disturbance from log landings would not occur since old landings would be re-used.

The long-term reduction of soil productivity after road decommissioning would result from the very rocky soils which have low levels of organic matter. Although reduced, revegetation is possible as evident from road decommissioning on similar soils nearby within the Clearwater salvage project; re-vegetation was estimated at greater than 50% three years after planting. Also, off-site adverse effect from the road would be reduced by restoring hydrologic function; these include concentrating overland flow and impeding soil throughflow.

Effects on Weeds (Ibid p. 12)

Soils and overall site productivity can be adversely affected by weeds. The effects of weeds would be limited within the harvest units to skid trails (from 10-15% unit area) for Auggie Creek harvest units and less than 5% for the Mountain Creek units. Effects may be slightly increased where hot burning occurs, although slashing afterward would provide for increased competition of native species with groundcover and soil conditioning. Resource protection measures (Table 6, Resource Protection Measure #s 47-49) included in Alternative 2 should help to reduce or eliminate the introduction or spread of weeds.

Cumulative Effects

Evaluation of cumulative effects on soil productivity does not require an integrated “watershed type” assessment. A larger geographic area such as a watershed or project area is not considered an appropriate geographic area for soil cumulative effects analysis. This is because assessment of soil quality within too large an area can mask or dilute site-specific effects. Northern Region policy (FSM 2554.03, 2554.1(1), 2554.1(3)(a)) states that the soil quality standards should be applied to the activity area. Thus cumulative effects to soils are evaluated for site-specific activity area (i.e., proposed vegetation treatment units), but are not evaluated for the entire watershed or project area (Ibid p.13).

While past impacts from regeneration timber harvest have created conditions where organic matter is in short supply, the risk for adverse cumulative impacts would be lowered substantially by conserving organic matter in these old harvest units. Burning would be limited to 30% within these areas and slashing would occur afterward. Also, soils would be further amended by leaving precommercially thinned material on-site in the T units, and slashing in the S units would occur after burning, leading to additional groundcover protection and nutrient capital for soil function. Woody material would be left from slashing at a rate of 5-20 tons/acre which serves to balance soils needs with lowering the fuel hazard (Brown et al 2003). The slash would provide forest floor microsites that enhance soil function for recovery in these old harvest units. Micro site structure from down woody material provides for invertebrates (Jurgensen et al 1997) and soil

fungus (Harvey et al 1989, Graham et al 1994), and moderates temperature and moisture flux (Jurgensen et al 1997, Pyle and Brown 2002) (Ibid p. 14).

Hydrology

This information is summarized from the Hydrology Report which is available on the Lolo National Forest web site. Specific resource protection measures related to hydrology are described in Table 6.

Environmental Consequences (Hydrology Report p. 22)

No Action Alternative – Direct, Indirect, and Cumulative Effects

The No Action Alternative would maintain the existing condition. Wildfire would likely be the predominant natural influence with flooding and windthrow as other possible influences.

Directly, indirectly, and cumulatively the existing road system would continue in the short- (less than 10 years) and long-term (longer than 10 years) to contribute various quantities of fine sediment to streams. Infrequently used roads would continue to re-vegetate, reducing the amount of sediment produced and possibly contributed to streams. The current modeled existing condition is 0.88 tons per year from 63.6 miles of contributing road segments and 17.4 miles of contributing trail segments. Water yield is likely less than historic levels in all watersheds. Stream channel and road fill scour, channel aggravation, and risk of sediment contribution from failure of undersized stream crossings would persist until otherwise addressed.

All existing conditions and trends are likely to be maintained with some possible improvements in the future. The No Action Alternative partially fulfills Regulatory and Forest Plan direction because some conditions are within standards, while others, primarily roads and road-stream crossings, need improvements, as described.

Action Alternative – Alternative 2

Fine Sediment Delivery Assessment: Forest roads and ground-based timber harvest activities pose the greatest risk of delivering fine sediment to streams. This sediment delivery assessment addresses proposed timber harvest activity including skid trails, prescribed burning, existing road surface erosion, proposed road construction, road maintenance work, increase in traffic levels from proposed activities, proposed road decommissioning, and culvert replacements (Ibid p. 23)

Vegetation Treatments: Sediment production values for timber harvest and associated vegetation treatments were generated by multiplying the Disturbed WEPP output values by the area of each treatment unit. Representative Disturbed WEPP models were created for the scenarios of tractor harvest units, slash units, precommercial thinning units, skid trails/landings, and prescribed fire. All models have indicated that 0 tons of sediment are expected to be delivered beyond the buffers. Therefore the 965 acres of harvest, thinning, and/or burning proposed in Alternative 2 would have no measurable or detectable effect on sedimentation of streams (Ibid p. 25)

Roads: The major potential source of sediment in the analysis area is roads. Sediment eroded from unpaved roads is typically delivered to stream channels at stream crossings or along road segments in close proximity (generally less than 300 feet) to streams (Ibid p. 25).

New Road Construction: Alternative 2 proposes 0.59 miles of new road construction, all of which would be decommissioned after use. Road segments within 300 feet of project streams and

wetlands were assessed for sediment effects, which equates to 0.36 miles of new construction with sediment delivery potential. WEPP model values for this road indicate that 0.0 tons of sediment would be delivered on an annual basis (Ibid p. 25).

Road Reconstruction and Maintenance: Road reconstruction and maintenance activities would improve road conditions using typical BMPs on specific road segments. Disturbance of the road bed material as a result of blading normally results in a short-term (less than 10 years) increase in sediment (Luce and Black 1999). This increase typically subsides 60-80% within the first two years after blading (Sugden and Woods 2007, Luce and Black 2001, and Megahan 1974).

Table 7 - Modeled sediment delivery for proposed road reconstruction

Alternative	Short-term Sediment Delivery Reconstruction		Long-term Decrease with BMPs	
	Alternative 2			
	0.03 tons/yr	0.1 tons total*	0.04 tons/yr	0.4 tons total**

* Modeled for project and predicted to occur over 2 years.

** Modeled for project and predicted to occur over 10 years.

As shown in Table 7, although short-term increases of sediment delivery would occur because of sediment disturbance associated with proposed activities, the long-term improvements are expected to lead to an overall net decrease in erosion and sediment delivery. Using the cited research, BMPs would lead to reductions of 75% in modeled sediment loads every year following implementation (Ibid p. 25-26).

Log Haul: Increased traffic levels from log hauling can increase sediment production primarily by rutting and causing road erosion, especially to unpaved and native surfaced roads. Modeling indicates sediment delivery during hauling operations from approximately 5.8 miles of roads and trails under Alternative 2. Under Alternative 2, total sediment delivered is estimated at 0.2 tons over a 5-year period (Ibid p. 26).

Road Decommissioning and Culvert Removal: (Ibid 26-27) Road closure and decommissioning would involve short-term (less than 10 years) disturbance and possible erosion and sediment production. Long-term (greater than 10 years) sediment production would be reduced below pre-existing conditions, and reduced hydrologic connectivity would decrease the impact of these roads on surface runoff. Alternative 2 proposes decommissioning 1.46 miles of non-system roads in the project area and a year-round road closure for 1.78 miles of project haul roads. Sediment reduction would result from closure and hydrologic stabilization of these roads. These road closures were modeled as a long-term sediment reduction of 0.1 tons over a 10-year period. This total is based on a savings of the existing annual sediment loads for these roads.

Additionally, under Alternative 2 about 0.59 miles of short-term and temporary roads would be decommissioned. In order to account for short-term increases in sediment from road decommissioning, the WEPP: ROAD model was re-run for selected road segments with different road widths depending on level of closure to account for machinery. Model results show that no sediment loads are expected to be generated during decommissioning.

Undersized culverts at road stream crossings pose a potential risk of sediment contribution in the event of road fill failure. Culvert removal and replacement involves a short-term disturbance to channels at the crossing site, with an associated release of sediment to a stream during and immediately after construction work. Previous monitoring on the Lolo National Forest (Casselli et al. 1999) demonstrated that stream crossing removal/ replacement using adequate BMPs may generate 1-2 cubic yards of short-term sediment (1-2.5 tons) per 500 cubic yards of road fill

volume. Using these values, about 5 tons of sediment could be contributed by the proposed culvert removals and replacements. However, long-term sediment production from the crossings would be reduced by an estimated 5.25 tons because of lower risk of episodic failure.

Sediment Delivery Summary* (Ibid p. 28) Table 8 provides a summary of all values described above for Alternative 2.

Table 8 - Summary of modeled short-and long-term sediment delivery effects from roads and road activities (sediment measured in tons)

Alternative	Existing Roads (tons/year)	Project Harvest and Vegetation Treatments (+)	New Road Construction (+)	Haul Route Traffic (+)	Reconstruction	Road Closure and Decommissioning	Crossing Replacement	Total (10-year period)	Change from Existing (10-year period)	Percent Change from Existing (10-year period)
Alternative 1	.88							8.8	0	0
Alternative 2	.88	0.0	0.0	0.2	+0.1 -0.4	+0.0 - 0.1		-0.5	8.8 to 8.6	- 3%
“As Funded”** Improvements	.88						+5 - 10.5	-5.5	8.8 To 3.3	- 63%
Short-term increases (+) are generally expected to occur for 1-5 years depending on activity. Totals are summarized by the following years of influence over a 10 year period. Timber operations (5 years); New Construction (2 years); Haul (5 years); Reconstruction (2 years); Road Decommissioning (1 year); Crossing Replacement (1 year)										

*Would only be implemented if additional funding were available above what is generated by the sale of wood products in this project.

Water Quantity/Water Yield

Equivalent Clearcut Area (ECA) analysis is a relative index of water yield increase resulting from vegetation removal. Water yield increase is greatest immediately following vegetation removal. In years subsequent to vegetation removal, the ECA (and water yield increase) declines, or “recovers”, because of vegetation re-growth. Table 9 displays a comparison between existing and proposed ECAs for Alternative 2 (Ibid p. 30).

Table 9 - Watershed Equivalent Clearcut Acreages by Activity or Event for Alternative 2

Watershed	Treatment/ Event	% Drainage Effected	% Hydrologically Recovered	Watershed % in ECA
Trail Creek				
Proposed Harvest	146 acres	0.8	0	0.2
New Total				25.2
Morrell Creek				
Proposed Harvest	0 acres	0.0	0	0.0
New Total				21.5
Auggie Creek				
Proposed Harvest	819 acres	8.2	0	2.7

Watershed	Treatment/ Event	% Drainage Effected	% Hydrologically Recovered	Watershed % in ECA
New Total				25.6

Table 9 displays that under Alternative 2, Trail Creek harvest proposal results in a 0.2% increase in ECA to the drainage, totaling 25.2 overall. In Morrell Creek, there is no change in ECA because no harvest is proposed in this watershed. Proposed harvest activities in the Auggie Creek drainage increase ECAs by 2.7 percent producing a basin total of 25.6 percent. These quantities are well below historic stand values and are below the 30% value thought to be of concern for measurable water yield influences (Ibid p. 31).

Water Quality/Channel Stability: (Ibid p. 31) Implementing the harvest portion of Alternative 2 would not result in any negative, long-term, direct, indirect or cumulative impacts to stream channel stability because INFISH stream buffers would be applied and negative water yield effects are not anticipated.

Although Alternative 2 would result in improvements, as discussed above, there would be some short-term impacts related to removal and/or replacement of structures as streams are reconfigured. However, the culvert replacements and removals would have long-term benefits to stream channel stability by providing structures that allow passage of water, material, and aquatic organisms via natural stream processes and functions. Standard mitigation measures, BMPs, and aquatic organism passage (AOP) design criteria for Forest Service Region 1 stream crossings would ensure stream channel stability and function and AOP where structures were removed and/or replaced.

Cumulative Effects (Ibid p. 32-33)

Stream channels in the project watersheds have been affected by many different land uses and natural events. Effects associated with the No Action Alternative would be the same on State and private lands, but would result in less rehabilitation and sediment reductions on Forest land. Effects are likely exacerbated in watersheds with higher road density. For Alternative 2, water yield would gradually diminish over time as vegetation re-grows. Extensive wildfire could combine with the past, proposed and foreseeable actions to create water yields that are larger than historic averages. Accurate predictions are improbable as wildfire acts variably across the landscape, mostly resulting in positive channel influences. However, where water yields are excessive and combined with erosion processes, channels can be degraded. Water yield may be impacted to varying degrees by other factors such as windthrow, beetle kill, and fire suppression.

Fine sediment is influenced by many natural and anthropogenic sources. The cumulative result of implementing the action alternative is a reduction in road-related sediment. A short-term increase is expected for two to five years and would be incremental (i.e., not occurring all at once). The short-term increases would combine with other sediment impacts from unpredictable private and State land activities, which have less stringent conservation practices. As reinforced by sediment modeling efforts, an annual decrease in sediment effects to water quality is expected. Alternative 2 would meet Forest Plan and regulatory guidance related to stream channels. Where stream crossing culverts are removed or upgraded, stream channel stability would be improved.

Fisheries

This information is summarized from the Fisheries Report which is available on the Lolo National Forest web site. Specific resource protection measures related to fisheries are described in Table 6.

Environmental Consequences

Alternative 1 (No Action) Direct, Indirect Effects, and Cumulative Effects

The implementation of the No Action Alternative would have no immediate direct, indirect, or cumulative effects on aquatic resources. However, the existing conditions for most Bull Trout Baseline Indicators are functioning poorly thus the maintenance of these conditions would not contribute to the recovery of bull trout or prevent the listing of westslope cutthroat trout (Fisheries Report p. 12).

Alternative 2 (Proposed Action) Direct and Indirect Effects

Due to increased short-term sediment generated by the removing/replacing two aquatic barrier culverts and road maintenance, a short-term negative impact to native salmonids would be expected with Alternative 2. It is anticipated that this project would result in incidental take and generate a *“May Affect, Not Likely to Adversely Affect”* determination for bull trout consultation. The short-term sedimentation increase *“May Impact Westslope cutthroat trout individuals, but is Not Likely to Result in a Trend toward Federal Listing”* under the Endangered Species Act. A Biological Assessment regarding effects to federally-listed fish species and critical habitat located within the analysis area will be submitted to U.S. Fish and Wildlife Service.

The same actions that would cause the short-term negative impacts discussed in the paragraph above have the following long-term beneficial effects: restore aquatic species access to 8.6 miles of stream within the Morrell Creek drainage (Ibid p. 12) and reduce road density (Transportation Report, p. 12).

Alternative 2 would have no effect on: stream temperatures, refugia quality, pool frequency and quality, large pools, off-channel habitat, large woody debris, stream bank conditions, floodplain connectivity, stream bank stability, stream width/depth ratios, peak/base flows, or drainage network, or watershed condition. The primary reason there would be no effect to these elements is because modified INFISH buffers would be applied (Table 6, Resource Protection Measure #33) which would restrict activities occurring next to streams. Also there would be no significant increases in equivalent clearcut area, and road construction and decommissioning is proposed on flat ground and high terraces eliminating effects to flow/hydrology characteristics (Ibid p. 12 - 15).

Sediment levels in the Seeley_Archibald HUC would remain the same because all ground disturbances would have low delivery risk. The Morrell_Drew HUC would see a net reduction in sediment levels (although minor at the HUC scale) because BMPs would be implemented prior to haul on NFSR #477. Trail Creek HUC would see a short-term increase (approximately 1 year) in sediment level associated with culvert replacement. Reductions (project duration of 1 -3 years) would result as BMPs were implemented at the crossing sites but long-term (greater than 3 years or post project) would be dependent upon future road maintenance actions (Ibid p. 13).

The risk of chemical contamination is usually associated with fuel reduction and timber projects that use herbicides to mitigate weed spread. The Mountain Creek treatment units would be

implemented during snow covered or frozen ground conditions and would not likely require any use of herbicides, other than at landings. The Auggie Creek treatment units are located in a recreational setting and have an annual herbicide plan to address weeds throughout the Auggie trail system. Thus, there would not be a large need to increase the weed treatment area as part of this project. Due to the low amounts of herbicide treatment needed and the use of the adjusted RHCA's there is a low risk of chemical contamination. Use of a low toxicity herbicide such as, Milestone, following label precautions, and following application BMPs further reduces any reason for concern (Ibid p. 14).

Alternative 2 (Proposed Action) Cumulative Effects

The implementation of the Proposed Action would have no long-term cumulative detrimental effects to aquatic and water resources. There would be no increase in erosion, or any changes in water quality or fish habitat. Improvements to the road crossings at Trail and Swamp Creeks would provide for cumulative passage at the Morrell Creek drainage scale (Ibid p. 15).

Wildlife

This information is summarized from the Wildlife Biological Evaluation and Wildlife Report which is available on the Lolo National Forest web site. Specific resource protection measures related to wildlife are described in Table 6.

Species Not Affected

Alternatives 1 and 2 would have no effect on the following species, either because the area lacks suitable habitat, or the project would occur outside the species' range: Canada lynx, Coeur d'Alene salamander, common loon, harlequin duck, and northern leopard frog (Wildlife Report p. 4).

Gray Wolf (Reinstated as Endangered 12/2008)

Direct and Indirect Effects– Both Alternatives (Ibid p.14)

The No Action and Action Alternative would both have *No Effect* on the gray wolf. This determination is based on the following rationale:

- ◀ Wolves in the project area are uncommon and no den or rendezvous sites are known.
- ◀ There would be no reduction in prey, no increase in livestock use, and little to no long-term change in human use under either of the alternatives.

Cumulative Effects

Because the project would have no direct or indirect effect on gray wolf under the no action alternative and action alternative, there would also be no cumulative effects for this species.

Grizzly Bear (Threatened)

Direct and Indirect Effects - No Action Alternative (Ibid p. 16)

Because this alternative would not change the existing vegetative condition on the project area or change existing road densities it would have *No Effect* on grizzly bears.

Cumulative Effects

Because the project would have no direct or indirect effect on grizzly bears, it would have no cumulative effects.

Direct and Indirect Effects – Action Alternative (Ibid p. 18)

The determination for this project is “*May Affect, Not Likely to Adversely Affect*”. This determination is based on the following rationale:

- ◀ The project is not within the Northern Continental Divide Ecosystem Grizzly Bear Recovery area and is not within Management Situation 1 habitat. A programmatic biological assessment is in place that covers the effects of existing roads, grazing and sanitation/attractants on grizzly bears.
- ◀ No new permanent roads would be constructed. The road improvements would be done on existing roads, many of which are closed to the public year-round. Post project there would be more obliterated and decommissioned roads in the immediate project area which translates to enhanced wildlife security.
- ◀ All logging activities would occur in the winter (roughly 12/1 – 4/1) in the Mountain Creek area.
- ◀ Most activity in the Auggie Creek area would occur from 8/15 – 10/16 which is outside of the critical spring period.
- ◀ Based on elevation, slope and aspect, the project area is not quality denning habitat and probability of disturbing a denning grizzly bear is low.
- ◀ Cover in the form of tree boles would be reduced; however, the forested nature of the treated stands would be retained. In addition, small and connected patches of non-treated cover would remain within the project area after implementing the project.
- ◀ A bear attractant order is in place across the Seeley Lake Ranger District which requires safe storage of all bear attractants.
- ◀ No grizzly bear linkage zones or corridors would be impacted.

Cumulative Effects

Plum Creek lands in and adjacent to the project area have been extensively harvested during the past 40 years. There is limited commercial timber remaining at this time outside of Stream Management Zones. It is unlikely that additional roads will be built for the purpose of timber harvest. These lands are slated for Forest Service acquisition under the Montana Legacy project. Some resource management activities will likely continue to occur on these lands regardless of ownership.

Forest Service lands in this area have experienced some timber harvest over the past 50 years but overall are forested and provide suitable habitat for grizzly bears. The most recent notable logging activity on federal lands in the project area vicinity occurred recently under the Seeley Fuels project (approximately 1600 acres).

The scale of this proposed project is relatively small (965 acres) and involves no new permanent road building or other permanent development. In regard to cumulative impacts on grizzly bears,

the anticipated habitat changes related to this project are not significant. Further, security would be enhanced by more permanent and restrictive road closures.

Bald Eagle (Threatened – Delisted 2007) (Ibid p. 19)

Direct and Indirect Effects – Both Alternatives

Implementing the proposed activities would have *No Effect* on bald eagles (Montana Bald Eagle Management Plan 1994, Programmatic Biological Assessment for Activities that are Not Likely to Adversely Affect Listed Terrestrial Species, 2004). This determination is based on the fact that there is no quality bald eagle nesting habitat or occupied bald eagle nests within 2.5 miles of the project area.

Cumulative Effects - Both Alternatives

Because the project would have no direct or indirect effect on bald eagles, it would have no cumulative effects.

Fisher (Sensitive)

Direct and Indirect Effects - No Action Alternative (Ibid p. 25)

Because this alternative would not change the existing vegetative condition on the project area or change existing road densities it would have *No Effect* on fisher.

Cumulative Effects - No Action Alternative

Because the project would have no direct or indirect effect on fisher under the no action alternative cumulative effects will not be analyzed for this alternative.

Direct and Indirect Effects - Action Alternative (Ibid p. 26)

The action alternative would have direct and indirect impacts on fishers.

This project is compatible with the management recommendations for fisher in that; it is on a relatively small scale in relation to fisher home range size, mature and old-growth trees would be generally retained with the focus being understory and mid-story thinning, riparian areas and wet meadows would be buffered resulting in increased habitat heterogeneity, and access would not be increased under the action alternative. Based on this rationale, the determination is that the action alternative *May Impact Individuals* of this species but would not have significant impacts at the population scale. The impacts would be primarily in the form of short-term displacement during the course of timber removal activity and some loss of potential foraging habitat. These impacts would not likely result in any individual mortality. As such, the project would not increase the potential for further population declines or lead toward federal listing.

Cumulative Effects - Action Alternative

Trapping, increased road access, and extensive clearcutting, especially in riparian areas, all likely contributed to fisher population declines across the western U.S. Fishers were released in some areas of western Montana around 1959 and 1988 through 1991 to augment nearly extinct populations (Powell and Zielinski 1994). Montana Fish Wildlife and Parks regulates trapping, but fishers remain vulnerable to trapping pressure. The decreasing use of clearcutting and riparian harvest may have stabilized the amount of fisher habitat in Montana.

Past, present and reasonable foreseeable activities in and adjacent to the project area which may impact fisher habitat are described in detail in Appendix D and include: timber harvest, recreational use, general development, prescribed fire, and road building. These activities likely reduced fisher habitat quality within the project area and also subjected the species to increased trapping pressure.

As described in Appendix D, past timber harvest has occurred within the project area using various prescriptions and logging systems. In total, about 13,104 acres were harvested in the 3 HUCs 1950 to present with prescriptions ranging from regeneration harvests (about 6091 acres) to intermediate and unevenaged cuts (about 7013 acres). These activities certainly had some impact on fisher habitat quality, especially the regeneration treatments. Presently, the areas treated have regenerated with trees and cover values are increasing. This equates to increased travel and forage habitat for species like fisher.

The action alternative would result in reductions of forest canopy (primarily small-to medium-sized trees) and down woody material, adding to the impacts from past activities. However, these alternatives would retain down woody material as directed by the Forest Plan and resource protection measures for soils and watershed. In addition, the action alternative would only include regeneration harvest using small patches of group tree selection within larger improvement cut units so the forested nature of treated stands would be maintained. Finally, the overall reduction in road density following project completion would be beneficial to fisher and other species that are subject to trapping pressure.

North American Wolverine (Sensitive)

Direct and Indirect Effects – Both Alternatives (Ibid p. 28)

Implementation of the proposed activities would have *No Impact* on the wolverine. This project would have insignificant effects on wolverine under either alternative because: the size of the proposed project is much smaller than an average wolverine home range; the area lacks quality wolverine denning habitat; and the treatments would not convert the area to non-forest, reduce ungulate densities, or increase motorized access (including snowmobiles). The decreases in road densities under the action alternative would likely be beneficial to this species and to trapped and hunted species in general. Neither of the alternatives poses significant risk to wolverine population viability on the Lolo NF.

Cumulative Effects – Both Alternatives

Because the project would have no direct or indirect effect on wolverine, there would be no cumulative effects.

Northern Bog Lemming (Sensitive) (Ibid p. 30)

Direct, Indirect, and Cumulative Effects – Both Alternatives

Implementation of the proposed activities would have *No Impact* on northern bog lemming. Vegetation treatments can impact bog lemming by causing direct mortality through collisions or crushing by heavy equipment, or by destroying plants and compacting soil that in turn can alter plant foraging, nesting, resting, and cover habitat (Hickman et al. 1999). Skid trails or roads in lemming habitat may divert or alter surface water flows, thus changing water levels and drainage patterns and altering wet meadow habitat (*Ibid.*).

Because the proposed activities would not occur in any wet meadows or riparian areas and there would be no increase in motorized use or other human recreational activity, neither of the alternatives would have any direct, indirect, or cumulative effects on northern bog lemmings.

Townsend's Big-eared Bat (Sensitive) (Ibid p. 31)

Direct, Indirect and Cumulative Effects – Both Alternatives

No activities would occur directly around any open adit, cave, or mine and no such structures are known to occur within the project area. All riparian areas and wet meadows would be buffered and remain untreated, thus potential foraging habitat would not be altered or disturbed. Due to the lack of suitable roosting habitat, the presence of this species is highly unlikely within the project area. Therefore this project would have *No Impact* on Townsend's big-eared bats under either alternative.

Cumulative Effects

Because the project would have no direct or indirect effect on Townsend's big eared bats, there would be no cumulative effects.

American Peregrine Falcon (Sensitive) (Ibid p.32)

Direct, Indirect and Cumulative Effects - Both Alternatives

Implementation of the proposed activities would have *No Impact* on the peregrine falcon. This determination is based on the following rationale:

- ◀ There is no known nesting or nesting habitat within or immediately adjacent to project area.
- ◀ The proposed treatments are improvement cuts which retain ample forest cover to maintain landscape connectivity and habitat conditions for species associated with forests.

Cumulative Effects - Both Alternatives

Because the project would have no direct or indirect effect on peregrine falcons, there would be no cumulative effects.

Black-backed Woodpecker (Sensitive) (Ibid p.36)

Direct and Indirect Effects - No Action Alternative

Because this alternative would not change the existing vegetative condition on the project area, it would have *No Impact* on black-backed woodpeckers. Insect-infested trees would likely continue to provide limited foraging opportunities for this species. It is worth mention that the no Action Alternative would likely result in the continued aggressive suppression of fires within the project area. Further, taking no action would limit the Seeley Lake Ranger District's ability to use prescribed fire in this area. For these reasons, mature, fire-killed trees would not be recruited except in the even of an uncontrolled wildfire.

Cumulative Effects - No Action Alternative

Because the No Action Alternative would have no direct or indirect effect on Black-backed woodpeckers, there would be no cumulative effects.

Direct and Indirect Effects - Action Alternative (Ibid p. 37 – 38)

Implementation of the action alternative *May Impact Individuals* of this species but would not have significant impacts at the population scale. The impacts would be primarily in the form of displacement during timber removal activities and would not likely result in any individual mortality. As such, the project would not increase the potential for further population declines or lead toward federal listing. This determination is based on the following rationale:

- ◀ This project would not result in the removal of fire-killed trees and would create some fire-killed forest patches.
- ◀ Black-backed woodpeckers have been shown to be strongly associated with recent burns in western Montana and were detected at very low rates in insect-infested stands during surveys conducted in the summer of 2003 (Avian Science Center data).
- ◀ No regeneration harvest would be conducted (aside from group tree selection in isolated clumps) and the overall forested nature of all treated stands would be retained.

Cumulative Effects - Action Alternative (Ibid p. 36)

As detailed in Appendix D, past timber harvest has occurred within the project area using various prescriptions and logging systems. In total, about 13,104 acres were harvested in the 3 HUCs from 1950 to present with prescriptions ranging from regeneration harvests (about 6091 acres) to intermediate and unevenaged cuts (about 7013 acres). These activities certainly had some impact on black-backed woodpecker habitat quality, especially the regeneration treatments. Presently, the areas treated have regenerated with trees, however, these forests have not yet reached an age/size class which provides suitable black-backed woodpecker habitat.

For many forest types in the Northern Rockies, stand-replacement fires were the common fire regime. Historic accounts suggest that black-backed woodpeckers were relatively abundant in recently burned forests (Bent 1939). In the period between 1940 through 2000, active fire suppression greatly reduced the number of acres that burned with stand-replacing fires. Forests that actually did burn during this period were often quickly salvaged to remove wood while it still had value. This combined effect of fire suppression and salvage harvest greatly reduced the acres of standing burned trees, the preferred black-backed woodpecker habitat. Following this reduction in habitat, black-backed woodpeckers appeared to have gone from being relatively abundant to relatively rare.

The listing of black-backed woodpeckers as a sensitive species has highlighted the importance of burned trees as wildlife habitat. Several studies (Caton 1996, Hutto 1995, and Saab and Dudley 1998) have shown the close tie between these woodpeckers and burned forest. In many recent fires on National Forest System lands, salvage has been limited or totally excluded for a variety of reasons that include maintaining woodpecker habitat, environmental laws, and litigation. Wildfires within wilderness areas have been the main source of unsalvaged burned habitat in western Montana during recent years. Continued aggressive fire suppression and the limitations on use of prescribed fire or fire use are probably the greatest significant threats to well-distributed black-backed woodpecker habitat on the Lolo NF.

Flammulated Owl (Sensitive)

Direct and Indirect Effects - No Action Alternative (Ibid p. 40)

Because this alternative would not change the existing vegetative condition on the project area, it would have *no direct impact* on flammulated owls. However, there would be some negative indirect effects for flammulated owls under this alternative. These effects would be related to the persistence of dense understories and the continued exclusion of mixed severity fires. Over time, these two factors would contribute to ever increasing chances of a stand-replacing event in the area which would result in creation of habitat unsuitable for flammulated owls for a long duration of time.

Cumulative Effects - No Action Alternative

See discussion in Cumulative Effects section below. Also recognize that taking no action on this project and in other situations where forests have missed one or more fire return intervals due to fire suppression could be detrimental to flammulated owls and other species over time.

Direct and Indirect Effects - Action Alternative (Ibid p. 42)

Implementation of the Action Alternative *May Impact Individuals* of this species but would not have significant impacts at the population scale. The impacts would be primarily in the form of short-term displacement during the timber removal phases of the project and would not likely result in any individual mortality. Timing restrictions of this harvest in relation to goshawk no activity buffer and winter harvest will mitigate much of this displacement risk. As such, the project would not increase the potential for further population declines or lead toward federal listing. For a detailed discussion on flammulated owl population viability see Samson 2006.

This determination is based on the following rationale:

- ◀ This project would retain large diameter trees, especially ponderosa pine and western larch which are critical flammulated owl habitat components.
- ◀ Flammulated owls are not known to occur in the area and habitat quality for the species within proposed treatment units is not high.
- ◀ No regeneration harvest would be conducted and the overall forested nature of all treated stands would be retained.
- ◀ The treatments under the action alternative would create habitat conditions favorable to flammulated owls through opening the mid-story while maintaining an average canopy closure of at least 50%. Further, most mechanical treatment would occur outside of the time period during which this species is present in Western Montana due to winter only units (Mountain Creek) and seasonal restrictions on harvest (Auggie Creek).

Cumulative Effects - Action Alternative (Ibid p. 41)

As described in Appendix D, past timber harvest has occurred within the project area using various prescriptions and logging systems. In total, about 13,104 acres were harvested in the three HUCs from 1950 to present with prescriptions ranging from regeneration harvests (about 6091 acres) to intermediate and unevenaged cuts (about 7013 acres). These activities certainly had some impact on flammulated owl habitat quality, especially the regeneration treatments at lower elevations. Presently, the areas treated have regenerated with trees, however, these forests have not yet reached an age/size class which provides suitable flammulated owl habitat.

Forest fragmentation effects on flammulated owls have not been studied. While the flammulated owl is an old-growth associate (Reynolds and Linkhart 1992), the drier pine forest in which it occurs is naturally open with interior edges. McCallum (1994) speculated that dense stands may provide some roosting habitat, but may reduce nesting and foraging potential.

The effects of fire and fire suppression on the species has not been directly assessed (McCallum 1994). However, fire suppression in drier habitats used by the owl has replaced frequent, low intensity fires with infrequent high intensity fires, resulting in a stand structure uncharacteristic of ponderosa pine forests before European settlement (Habeck 1990). Linkhart (2001) concluded the association of flammulated owl productivity to open-grown forests with larger diameter trees suggests that the species is adapted to forests that were historically maintained by fire. A comparison of available ponderosa pine on the Lolo NF from 1938-42 to what exists today shows that ponderosa pine in all size classes has declined by about 2%, whereas Douglas-fir (a more shade-tolerant species) has increased by 12 to 14% (Samson 2006a).

Prior to 1900, underburns kept most ponderosa pine stands in western Montana in an open, park-like condition dominated by large old trees (Arno, Scott and Hartwell 1995). Many of these stands were harvested during early settlement because they were easily accessible at low elevations. Both harvesting and fire suppression allowed Douglas-fir to develop dense thickets in what were once open ponderosa pine stands. These thickets made foraging difficult for flammulated owls and removal of older trees reduced nesting sites for this species (a secondary cavity nester).

Projects that restore the open character of ponderosa pine and dry Douglas-fir stands and retain mature, large-diameter trees are believed to be beneficial for these owls. Conversely, the roughly 6091 acres of clearcut harvesting that have been conducted in the project analysis area over the past 3-4 decades likely had some detrimental impacts on this species, particularly in the low elevation areas where more suitable flammulated owl habitat occurs.

Northern Goshawk (Management Indicator Species)

Direct and Indirect Effects - No Action Alternative (Ibid p. 47)

Because this alternative would not change the existing vegetative condition on the project area or change existing road densities it would have *No Impact* on goshawks. It is worth mentioning that the No Action Alternative would likely result in the continued aggressive suppression of fires within the project area. Further, taking no action would limit the Seeley Lake Ranger District's ability to use prescribed fire in this area. For these reasons, shade-tolerant species such as Douglas-fir would continue to regenerate in the forest understory. Stands would develop denser understories and shade-intolerant species would decline. In the long term, these conditions would increase the likelihood of large-scale, stand-replacing fire which would have negative impacts on goshawk habitat.

Cumulative Effects – No Action Alternative

See discussion in Cumulative Effects section below. Also recognize that taking no action on this project and in other situations where forests have missed one or more fire return intervals due to fire suppression could be detrimental to goshawks and other species over time.

Direct and Indirect Effects – Action Alternative (Ibid p. 49)

Implementation of the action alternative *May Impact Individuals* of this species but not have significant impacts at the population scale. The impacts would be primarily in the form of short-term displacement during timber removal and some loss of potential high quality nesting habitat. These impacts would not likely result in any individual mortality. As such, the project would not increase the potential for further population declines or lead toward federal listing. For a detailed discussion on goshawk population viability see the Project File (Region 1 Goshawk Overview and Samson 2006).

The action alternative would result in more open stand conditions which could have short-term (< 20 years) impacts on goshawk prey but would likely improve goshawk foraging habitat conditions in the long run. This determination is based on the following rationale:

- ◀ This project is on the scale of a single goshawk pair territory.
- ◀ Nesting has been documented; the nest stand area has been dropped from the proposal, and would be left in an untreated condition. Untreated riparian zones and wetlands would also provide nesting habitat conditions within the Auggie area.
- ◀ Canopy closure and large tree abundance would remain within defined foraging habitat parameters.
- ◀ Surveys would be conducted in all suitable habitats the year prior to project implementation to determine if the nest stand is in another location.
- ◀ Resource protection measures would protect a goshawk nest should one be detected and include timing restrictions (4/15 through 8/15) within the 420-acre no activity buffer around the nest.

Cumulative Effects - Action Alternative

Past, present and reasonable foreseeable activities in and adjacent to the project area which may impact goshawk habitat are described in Appendix D in detail and include: timber harvest, recreation development, general development, fire suppression, and prescribed fire. Some of these activities likely reduced goshawk habitat quality within the project area and may have resulted in direct displacement of individuals. Specifically, regeneration cutting and removing large trees may have impacted local goshawk populations. These birds do not appear to forage effectively in large, cleared areas during nesting season, and large trees provide important nest sites (Reynolds et al. 1992).

As discussed in Appendix D, past timber harvest has occurred within the project area using various prescriptions and logging systems. In total, about 13,104 acres were harvested in the three HUCs from 1950 to present with prescriptions ranging from regeneration harvests (about 6091 acres) to intermediate and unevenaged cuts (about 7013 acres). These activities certainly had some impact on goshawk habitat quality, especially the regeneration treatments which significantly reduced canopy closure and large tree abundance. Presently, the areas treated have regenerated with trees and cover values are increasing. This equates to increased foraging habitat for goshawks but does not provide suitable nesting habitat.

Boreal (Western) Toad (Sensitive) (Ibid p. 50)

Direct and Indirect Effects - No Action Alternative

Because this alternative would not change the existing vegetative condition in the analysis area or involve any ground-disturbing activities it would have *No Effect* on boreal toads.

Cumulative Effects - No Action Alternative

Because the project would have no direct or indirect effect on boreal toads under the no action alternative, there would be no cumulative effects.

Direct and Indirect Effects – Action Alternative

The Action Alternative *May Impact Individuals* of this species but would not have an impact at the population level due to the protection of breeding habitat within the project area, breeding habitat protection on a broader scale, and the wide distribution of this species in the western U.S (Werner et al, 2004). Based on recent surveys conducted in Montana, it is unlikely that this species is present in the analysis area. For this reason, the potential for impacts to individuals is not likely. In addition, following Forest Plan standards and fisheries and hydrology resource protection measures, no riparian areas or wet meadows would be entered with mechanized equipment, therefore this project would have no impact on reproducing boreal toads under this alternative.

Direct impacts to toads traveling through forested habitats could occur under this alternative. Mechanical treatments during dispersal periods could result in crushing individuals. Activity fuels burning and ecosystem maintenance burning could result in mortality of dispersing individuals.

Cumulative Effects – Action Alternative

Cumulative impacts of the Action Alternative on this species can be broken down to those affecting reproduction and breeding and those affecting individuals during the non-breeding period. Impacts associated with breeding and reproduction would pertain to streams, riparian areas, vernal pools, and other water bodies. Historically, logging, grazing, road building, and general development would have impacted these types of areas and likely had direct impacts on this species and its offspring. The proposed project would not contribute significantly to additional impacts on reproducing boreal toads as all water bodies would be buffered and left undisturbed.

Regarding effects on individuals using habitats not associated with water, past, present and future logging, grazing, road building and other ground-disturbing activities could result in direct mortality of this species. The proposed project could add to these impacts under the action alternative in the form of direct mortality from burning or crushing.

Based on the spatial and temporal scale of these proposed treatments, the potential for impacts would occur over a fairly long duration but at a rather small scale in any given time period.

Elk (Management Indicator Species) (Ibid p. 53)

Direct and Indirect Effects - No Action Alternative

Because this alternative would not change the existing vegetative condition of the project area, it would have *no direct impact* on elk. However, there would be some negative indirect effects for elk under this alternative. These effects would be related to the persistence of over mature, closed

canopied forests and the continued exclusion of frequent, low intensity fires. Over time, these two factors would contribute to decreased foraging habitat increasing chances of a stand-replacing fire in the area which could result in losing security cover and thermal cover.

Cumulative Effects – No Action Alternative

See discussion in Cumulative Effects section below. Also recognize that taking no action on this project and in other situations where forests have missed one or more fire return intervals due to fire suppression could be detrimental to elk and other species over time.

Direct and Indirect Effects – Action Alternative (Ibid p. 54)

Implementation of the Action Alternative *May Impact Individuals* of this species but not have significant impacts at the population scale. The impacts would be primarily in the form of short-term displacement during timber removal activities and would not likely result in any individual mortality. In the long term (> 10 years), the activities proposed under this alternative would likely be beneficial to elk in the area. This determination is based on the following rationale:

- ◀ Habitat suitable for elk is known to occur within the project area and thus, elk could be displaced by on-the-ground activity.
- ◀ Very limited regeneration harvest (in the form of group tree selection) would be conducted and the overall forested nature of all treated stands would be retained.
- ◀ Treatment prescriptions included in the action alternative create habitat conditions generally favorable to elk.
- ◀ The proposed road decommissioning would result in enhanced elk security.
- ◀ Timing restrictions associated with a 420-acre goshawk buffer and winter only treatment in the Mountain Creek portion of the project would serve to minimize large scale displacement. In other words, impacts would be spatially and temporally separated.

Cumulative Effects – Action Alternative

Historically elk were impacted by over hunting. Populations declined across the species range and in many areas, elk were extirpated. As game regulations began to facilitate elk recovery, habitat modifications and road construction into secure areas became important elk management issues. Currently, elk populations in western Montana are at all time highs due to game laws, access management, improved forestry practices, and overall integrated efforts to protect this species. Loss of habitat from conversion of forests to subdivisions is probably the greatest challenges we face today from an elk management standpoint. This fact is illustrated on private lands in the Bitterroot Valley, approximately 80 miles southwest of the project area. Residential development is rapidly expanding in this area and reducing the availability of quality, undeveloped winter range. However, as discussed previously, recent land acquisitions have dramatically helped this situation. Although this project is not specifically designed to benefit elk, the action alternative would likely have long-term (> 10 years) benefits in that forage productivity, as well as security in the form of access restrictions, would increase.

Pileated Woodpecker (Management Indicator Species) (Ibid p. 57)

Direct and Indirect Effects - No Action Alternative

Because this alternative would not change the existing vegetative condition of the project area, it would have *no direct impact* on pileated woodpeckers. However, there would be some negative indirect effects for pileated woodpeckers under this alternative. These effects would be related to the persistence of dense understories and the continued exclusion of frequent, low intensity fires. Over time, these two factors would contribute to ever increasing chances of a stand-replacing fire in the area which could result in the loss of old-growth habitat conditions, live and dead large diameter trees, and creation of habitat unsuitable or of poor quality for pileated woodpecker nesting for a long duration of time.

Cumulative Effects – No Action Alternative

See discussion in Cumulative Effects section below. Also recognize that taking no action on this project and in other situations where forests have missed one or more fire return intervals due to fire suppression could be detrimental to pileated woodpeckers and other species over time.

Direct and Indirect Effects – Action Alternative (Ibid p. 58)

Implementation of the action alternative *May Impact Individuals* of this species but would not have significant impacts at the population scale. The impacts would be primarily in the form of displacement associated with timber removal activity and would not likely result in any individual mortality. As such, the project would not increase the potential for further population declines or lead toward federal listing. This determination is based in the following rationale:

- ◀ Habitat suitable for pileated woodpecker nesting and foraging is known to occur within the project area and thus, these birds could be displaced by on the ground activity. This impact would be minimized by seasonal activity restrictions across many of the proposed units.
- ◀ No regeneration harvest would be employed (except in small clumps of group tree selection totaling a maximum of 50 acres in the Mountain Creek plantation) and the overall forested nature of all treated stands would be retained.
- ◀ Treatment prescriptions call for the retention of all live and dead larch and ponderosa pine trees > 20" dbh.
- ◀ Prescriptions would create habitat conditions generally favorable to pileated woodpeckers.

Cumulative Effects – Action Alternative

Removal of snags during harvesting, fire suppression, and extensive salvage programs have historically impacted pileated woodpecker habitat throughout Region 1. Harvesting can remove snags, and fire suppression reduces the number of snags created across a landscape. Under current practices, habitat concerns related to pileated woodpeckers and other species are addressed. In most cases, large, high quality snags are now left in harvest and salvage units, and prescribed burning helps recruit new, fire-scarred snags.

Prior to 1900, underburns kept most of the ponderosa pine stands in an open, park-like condition dominated by large old trees (Arno, Scott and Hartwell 1995). Many of these stands were harvested during the early settlement because they were easily accessible at low elevations. Both harvesting and fire suppression allowed Douglas-fir to develop dense thickets in what were once

open stands. These thickets made foraging difficult for flammulated owls and removal of older trees reduced nesting sites for the secondary cavity nesters.

Projects that protect and recruit large diameter ponderosa pine and western larch stands are beneficial for pileated woodpeckers. An insignificant amount of prescribed burning has been done in the project area. Approximately 7,000 acres of suitable woodpecker habitat within the project analysis area were treated with commercial thin, improvement cut, and group tree selection treatments over the past 3 decades. These treatments likely resulted in insignificant nesting habitat impacts for pileateds. Conversely, the roughly 6,000 acres of regeneration harvest that have been conducted in the project area over the past 3-4 decades certainly had some detrimental impacts on this species, especially in cases where trees greater than 20" dbh were removed.

Biodiversity

Direct, Indirect, and Cumulative Effects

The Lolo NF provides habitat and has known populations of nearly all species which were historically present in this area including grizzly bears, gray wolves, lynx, and wolverines. No forest type conversion is proposed nor introducing exotic species. None of the Forest would be permanently changed to another vegetation type. The action alternative includes habitat improvements such as restoration of historic habitat conditions through mechanical treatment and prescribed burning which helps produce fire-maintained habitat. Considering the factors above, this project would have *No Impact* on biodiversity at the Forest level.

Fragmentation, Corridors and Linkages

Direct, Indirect and Cumulative Effects

The action alternative proposes altering the vegetation but those changes are consistent with the naturally-fragmented habitat. These vegetation treatments are designed so the area would retain heterogeneous forest cover. No alternative increases the open road density. Because none of the alternatives alter vegetation beyond patterns that occur naturally from fire and other disturbance and open road density does not increase, these alternatives have *No Impact* on fragmentation, corridors or linkages.

Noxious and Invasive Weeds

This information is summarized from the Invasive Weeds Report which is available on the Lolo National Forest web site. Specific resource protection measures related to weeds are described in Table 6.

Environmental Consequences

Direct and Indirect Effects Common to Both Alternatives (Noxious Weed Report p. 2-3)

Established weed populations along right-of-ways and on National Forest System lands may provide a source of seeds for infestation. Effects associated with weed population enlargement may include declines in the palatability or abundance of wildlife and forage (Rice et al., 1997), declines in native plant diversity (Forcella and Harvey, 1983; Tyser and Key, 1988; Williams,

1997), reductions in the aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion (Lacey et. al, 1989), and an overall decline of ecosystem health. The potential for the spread of existing noxious weeds and the introduction of new species exists for both alternatives. The potential for weed spread would be less with the No Action Alternative than for the Proposed Action, but existing populations may continue to spread due to seed transport by vehicular traffic, wildlife, and other natural dispersal methods.

Susceptibility parameters provided by Rice and Toney (1997) show that nearly all of the acres within the project area could be susceptible to invasion by one of the modeled weeds following disturbance. The susceptibility of habitat to other weed species is not known, however under both the alternatives weed management would continue following the direction of the Lolo NF Forest Plan Amendment 11, which implements Integrated Weed Management (IWM) practices (USDA Forest Service 1991). Seeley Lake Ranger District IWM uses education, prevention, biological, mechanical, cultural, and herbicides as tools to contain, control, and eradicate invasive noxious weeds on NF lands.

Alternative 1 No Action (Ibid p. 3-4)

Direct, Indirect, and Cumulative Effects

Under this alternative noxious weed management activities would continue as funding allowed, but no additional weed management activities would occur. The possibility of new weed species becoming established, and expansion of existing infestations, would remain at its current level since there would be no additional ground disturbance or canopy opening associated with road construction or decommissioning, timber harvest, or underburning. The Seeley Lake Ranger District would continue with its current weed treatment schedule.

Lack of additional weed control in the no action alternative in those areas not already covered by existing analyses could allow weeds to spread within the analysis area and to adjacent land ownerships. This alternative would result in negative impacts to native plant populations, recreation, soil and water, and other forest resources. However, these impacts would be less than under the action alternative due to the absence of canopy opening, ground disturbance, introduction of logging equipment, and underburning. Short-term impacts might be greater but because the disturbed areas will be treated there should be fewer weeds in the long term.

Past activities such as timber harvest, road and trail construction, and recreational use likely resulted in the introduction of weeds into the area. Current and reasonably foreseeable activities within the project area include firewood collection, recreational use of roads and trails, road maintenance, and fire suppression. These activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new weed species.

Alternative 2 Proposed Action (Ibid p. 4)

Direct and Indirect Effects

The greatest potential for the establishment or spread of weeds would result from activities that disturb the soil and open the canopy. The proposed action includes: harvesting timber, temporary road construction, creating skid trails, establishing log landings (although many existing landings would be re-used), and conducting understory slashing and burning. All of these activities have the potential to increase existing weed infestations as well as increase suitable habitat for new invaders to become established. Introduction of logging equipment could

bring weed seed and new invaders into the project area and result in expansion of existing infestations.

Using the “*Northern Region Risk Assessment Factors and Rating System*” (see Project File), the proposed Auggie Project has a “moderate risk” or likelihood of undesirable plant species, including noxious weeds species, spreading to project area. Undesirable plant species are located immediately adjacent to and within the project area. Project activities are likely to result in some areas becoming infested with undesirable plant species even when preventative management actions are followed. Control measures are essential to prevent the spread of undesirable plants or noxious weeds within the project area. There is a moderate possibility of adverse effects on-site and possible expansion of infestation within project area. A moderate rating calls for development of preventative management measures for the proposed project to reduce the risk of introduction or spread of undesirable plants into the area. The area would be monitored for at least 3 consecutive years and provisions would be made for controlling new infestations. The preventative management measures to be incorporated into implementation of the Action Alternative can be found in Table 6, Resource Protection Measures. These measures would significantly contribute to the goal of preventing or reducing new weed species establishment and the possible expansion of existing noxious weed populations.

Cumulative Effects

Current infestations of noxious weeds are a result of past (before weed control efforts were in place) and current activities in this area. In addition to the proposed activities, ongoing and future activities such as firewood collection, recreation, road maintenance, and fire suppression would occur in the project area. Any ground disturbance associated with these activities may result in the creation of new habitat for noxious weeds. These activities could result in increases of disturbed sites available for colonization by weeds, and new species of weeds could be introduced to the area. Resource protection measures (Table 6) would limit the spread of weed seed and establishment of new populations but are not expected to entirely halt spread.

Threatened, Endangered and Sensitive Plants

This information is summarized from the Botany Report which is available on the Lolo National Forest web site. Specific resource protection measures related to threatened, endangered and sensitive plants are described in Table 6.

Environmental Consequences

No Action Alternative - Direct, Indirect, and Cumulative Effects (Threatened, Endangered, and Sensitive Plant Report p. 7)

In the No Action Alternative, no ground disturbing activities would occur. Therefore, no direct impacts to rare plants or their habitat would occur. However, the potential beneficial indirect or cumulative impacts that would occur as a result of the proposed activities would also not occur.

Proposed Action - Direct, Indirect, and Cumulative Effects

Surveys found *Camassia quamash* (camas) plants adjacent to Seeley Creek. The no activity 150-foot buffer zone along Seeley Creek prescribed in Table 6 Resource Protection Measure #33 would protect most of these plants. There may be a few plants outside of this buffer that would be impacted.

Although surveys in the project area found no Forest Sensitive Species, Species of Concern (SOC), or Species of Interest (SOI) with the exception of the single population of camas discussed above, other occurrences may have been undetected. Undetected occurrences may potentially be directly affected for a brief period as a result of the proposed underburning within the project area. These effects are expected to be of short duration and nutrient releases in the soil should benefit plants. Prescribed fire and thinning of the canopy may stimulate the expansion of undetected populations by reducing competition and increasing light penetration to plants in the understory. Due to the small scope of the effects and the brief and temporary duration of the understory prescribed burn, the proposed project is not expected to contribute to cumulative effects for Forest Sensitive Species, Species of Concern, or Species of Interest.

While surveys found no occurrences of Water howellia (*Howellia aquatilis*), a federally-threatened plant known to occur near the Lolo NF (Ibid p. 5), a 200 foot buffer around the potential pond, as prescribed in the Resource Protection Measure #51 (Table 6) would adequately protect the species' habitat (Ibid p. 8). This buffer would exclude ground-disturbing activities including slash treatments. Project activities outside of the buffer would be in compliance with the Conservation Strategy which would maintain a favorable physical environment by preventing adverse hydrological changes and preventing lowdown. Proposed underburns in adjacent units would occur under spring or fall conditions to minimize risks of hot fires entering the buffer zone. A cool burn within the buffer zone would be allowed if it occurred. Therefore, no negative impacts would occur to this plant or its potential habitat.

Habitat for Spalding's silene, the other federally threatened plant known to occur near the Lolo NF, does not occur in the project area; therefore, no negative impacts would occur to this plant or its habitat (Ibid p. 8).

While the proposed Auggie project "may affect individuals, it is not likely to result in a trend toward Federal listing or loss of viability" for *Camassia quamash* and the other Regional Forester's sensitive plants, or SOC and SOI plants that could potentially occur in the project area. These plants include: *Carex chordorrhiza*, *Carex scoparia*, *Cirsium brevistylum*, *Cypripedium parviflorum*, *Dryopteris cristata*, *Epipactis gigantea*, *Grindelia howellii*, *Kalmia polifolia*, *Potamogeton obtusifolius*, *Ribes oxycanthoides* ssp. *cognatum*, *Ribes triste*, *Scheuchzeria palustris*, *Schoenoplectus subterminalis*, *Trifolium eriocephalum*, and *Waldsteinia idahoensis*. The determination for all other Regional Forester's Sensitive plants, SOC, and SOI plants not listed above, is that there would be no impacts to these plants or their habitat. Therefore the proposed action is consistent with Forest Plan and other regulatory direction. (Ibid p. 8)

Recreation

This information is summarized from the Recreation Report which is available on the Lolo National Forest web site. Specific resource protection measures related to recreation are described in Table 6

Environmental Consequences

No Action Alternative – Direct, Indirect, and Cumulative Effects (Recreation Report p. 3)

Under the no action alternative recreation activities within the Auggie project area would continue as they have in the past. Some short-and long-term enhancements within the Seeley

Creek Nordic Ski System, as discussed below in the Proposed Action, would not be realized under the no action alternative.

Proposed Action– Direct, Indirect, and Cumulative Effects

Implementing the proposed action would have both beneficial and negative effects on the recreational opportunities within and adjacent to the project area. Beneficial effects would include:

- ◀ Improving the visual setting of the existing trail system.
- ◀ Improving some trail grades and turning alignments that are currently out of standard for the desired difficulty class.

While the beneficial effects of implementing the project would be long-term the following negative effects on recreation would occur while the project was being implemented:

- ◀ Minor displacement of skiers during winter activities.
- ◀ Minor displacement of snowmobile riders during project activities.

The negative effects to recreation as a result of project implementation are short-term in duration. While some temporary and short-term minor displacement of recreationists during the time when harvest activities take place is anticipated, Resource Protection Measure #s 3 and 6 – 9 (Table 6) would aid in mitigating these effects. No significant issues were identified for recreation resources in the Auggie Creek Restoration/Fuels Project (Ibid p. 4).

Visuals

This information is summarized from the Visuals Report which is available on the Lolo National Forest web site. Specific resource protection measures related to visuals are described in Table 6.

Environmental Consequences

Effects Common to Both Alternatives

For the past several years most of western Montana has been experiencing drought conditions which has stressed trees in forested landscapes making them vulnerable to the impacts of insect, disease, and wildfire. Many trees in the Auggie project area are dying. This tree mortality is expected to occur to a certain degree in both of the alternatives, but to a lesser degree in Alternative 2 because efforts would be made to reduce the impact of these disturbances by improving forest health and vigor and reducing fuels (Visuals Report p. 5).

Effects of Alternative 1 – No Action

Direct and Indirect Effects (Ibid p. 5)

This alternative would initiate no human-caused change to the existing visual/scenic condition of the Auggie project area. No timber harvest or temporary road construction would occur. The Forest Plan Visual Quality Objectives would be met.

Fire suppression in the past 80 years has impacted the scenic integrity of the vegetative condition in the Auggie project area. These forests have developed dense patches of younger-aged trees which dominate these sites, and the risk of stand-replacement fire is of concern. This concern is amplified by dispersed recreational use and private residential developments intermingled with

and/or adjacent to National Forest. As use of Forest Service lands and understory growth increases, so does the risk of higher intensity fire activity. Higher intensity burns, such as stand-replacing fires, have potential visual effects that would take 40 - 50 years to recover as standing dead trees fall and young trees grow to maturity.

Cumulative Effects

Past timber harvesting, road construction and maintenance, and recreational use in the project area are evident across the landscape and have had moderate impacts to the existing scenic integrity of the area. These would not be further amplified by the no action alternative.

Effects of Alternative 2 – Proposed Action

Direct and Indirect Effects

While Alternative 2 would have both short-term (less than 5 years) and long-term (greater than 5 years) effects on the visual quality/scenery of the area, the treated areas would meet the Forest Plan standards and VQOs established for the project area (Ibid p. 6). Eight Resource Protection Measures (Table 6 RPM #s 10-17) would minimize the effects of the proposed activities on visual quality.

The most noticed visual effect of the proposed road work activities would be from ground disturbance exposing lightly colored soils and gravels on and near the main roads in the project area. It is highly likely that the visual effects of these activities would go unnoticed in the long-term but would have short-term (less than 5 years) visual effects that would meet the visual quality objectives of Retention and Partial Retention (Ibid p. 7).

The visual effects of treating units by improvement cutting with slashing and underburning (Units H1-H10) would be most noticed as a textural change in the forest canopy. Underburning after the units have been harvested would create some blackened ground surfaces as well as blackened tree boles. Since users of the trails through this area are traveling at a low rate of speed, the initial visual effects of the slash and ground disturbance created by treating these units would be very obvious and would not meet the VQO of Partial Retention. However, within 5 years from implementation, after slash has been disposed of and ground surfaces have recovered, the units should meet the Partial Retention VQO (Ibid p. 7-8).

The visual effects created by treating Units H12 and H14 – H17 (Improvement Cutting/Group Tree Selection/Slashing) would be most noticed as a textural change in the forest canopy with occasional small openings. Removing trees and slashing in Units H12, H14, H15, and H16 could open up aesthetic views of the natural wetlands in the area as well as an occasionally view of the Swan Mountain range. Unit H11 would not be visible from the viewpoints identified for this project.

Similar to the other improvement cut units, treating Unit H13 by Improvement Cutting/Group Tree Selection/Slashing/Underburning could create a textural change in the existing tree canopy. Underburning after the unit has been harvested would create some blackened ground surfaces as well as blackened tree boles. Ground disturbance and slash would also be very evident (Ibid p. 8).

Treating units by underburning only (Units S1 – S3) would result short-term visual effects caused by blackened forest floor and charring of the remaining tree boles. These effects would fade

within 5 years and would meet the VQO of Retention allocated to this area by the Forest Plan (Ibid p. 8).

Slashing and/or underburning Units S4 – S11 would result in a more open overstory stand of trees enhancing a viewer's ability to look through and into the remaining forest. Underburning would create some blackened ground surfaces as well as blackened tree boles. Initially, this treatment would be very noticeable to users of the trail system. However, within 5 years from implementation, after slash has been disposed of and ground surfaces have recovered, the units should meet the Partial Retention VQO (Ibid p. 8).

Precommercial thin treatments (Units T1 – T15) would have limited short-term visual effects and essentially no long-term visual effects. Red-needled slash would be noticeable immediately following the thinning. Once the needles fell, the visual effects of this treatment would greatly lessen. The visual effects of the treatments in these units would meet the VQO of Partial Retention (Ibid p. 8).

Cumulative Effects (Ibid p. 9)

Cumulative effects in the Auggie project area include past, present, and foreseeable future timber harvesting, prescribed burning, road construction, recreational use, private land development, special-use permits, and weed spraying. Any change to the visual resource from the proposed action would be in addition to past harvests and this analysis includes all past and present effects. Most of the past harvesting activity meets the VQOs established for this area by the Forest Plan as does most of the visible road system. The visual effects of the ongoing road maintenance in the area are short-term (less than 5 years) and often go unnoticed by forest visitors.

Because the Auggie project area is popular for dispersed recreational experiences and private land development continues to grow in Seeley Lake, the recreational pressure on landscapes directly next to town, such as the Auggie project area, is expected to increase. Depending on how recreation is managed in the area, this recreation could have a cumulative negative impact on the scenic quality of the area.

Forest Vegetation

This information is summarized from the Vegetation Report which is available on the Lolo National Forest web site. Specific resource protection measures related to vegetation are described in Table 6.

Environmental Consequences

Alternative 1 – No Action - Direct and Indirect Effects (Vegetation Report p. 23)

Alternative 1 would provide no direct restoration of the vegetative conditions that more accurately reflect historic conditions which would increase the area's ecological resiliency to uncharacteristically large and intense disturbances. The resiliency of the ecosystems would continue to decline and the risk of ecosystem instability would continue to increase.

Alternative 1 would provide no direct improvements in restoring the structure, composition, and function to nearer the historic range of variability of the forests; no direct improvement in recruiting future old-growth forests; and no direct improvement in maintaining, enhancing, or establishing "species-at-risk" (western larch and ponderosa pine).

Alternative 1 would not directly affect the current risk of wildland fires threatening or damaging private property, nor would it provide for the moderation of ladder and crown fuels conditions that would lead to reduced risk of sustained and historically uncharacteristic crown fires within either the low-to mid-elevation ponderosa pine, Douglas-fir, and western larch forests (VRU2) or the mid-elevation lodgepole pine, Douglas-fir, and subalpine fir forests (VRU3 & VRU4) that were historically influenced by frequent aboriginal fires (Arno et al 1997).

Alternative 1 would provide no direct reduction of bark beetle (Douglas-fir beetle and mountain pine beetle) infestation or risk of future infestation of host trees (Douglas-fir, lodgepole pine, and ponderosa pine). There could be a considerable loss of old-growth trees from bark beetle predation, particularly old-growth Douglas-fir and ponderosa pine in the proposed treatment areas.

Cumulative Effects Common to Both Alternatives (Ibid p. 24)

The mountain pine beetle populations and observed predation of host trees could continue in a worsening outbreak. The cumulative effects of the eventual outbreak would chiefly relate to the significant mortality of sawtimber-sized host trees and the environmental conditions associated with standing dead trees that ultimately fall to the ground (e.g., increased risk of lightning fires and increased wildfire hazard). Whether beetle populations actually continue to increase would depend on the number of insect brood emerging from infested trees and continued successful host infestation over ensuing years. In the short-term, bark beetle predation could continue to reduce the occurrences of lodgepole pine and species-at-risk. Aerial detection flights have observed increasing infestations of mountain pine beetles in host forests, including the proposed treatment areas. Bark beetle field surveys conducted in the late summer of 2008 within the immediate project area further substantiate the increasing levels of lodgepole and ponderosa pine mortality.

Alternative 1 - Cumulative Effects

Under Alternative 1 the declining health of old-growth forest and individual old-growth trees under the present uncharacteristic natural range of variation would predispose the project area to further uncharacteristic disturbances, structures, and processes. There are no other planned projects in proximity to the analysis area that would have a noticeable effect on this high-risk condition.

Alternative 2 – Proposed Action - Direct and Indirect Effects

Under Alternative 2, restoring vegetative components of composition, structure, and function to nearer those conditions of the pre-settlement landscape would serve the multiple benefits of fuel reduction, improved forest health, and reduced bark beetle risk.

The improvement harvests proposed in Alternative 2 would provide a direct reduction of bark beetle infestation or risk of future infestation of host trees on 371 acres. The remaining untreated high-risk stands could potentially continue to contribute to the overall bark beetle population within the analysis area. This alternative would reduce the potential loss of old-growth trees (particularly ponderosa pine and Douglas-fir) from bark beetle predation indirectly through the reduction of risk conditions in harvested stands (Ibid p. 25).

While improvement cutting would reduce overall stand density and the amount of bark beetle host species, it would also improve the vigor of residual trees. The altered stand conditions would reduce the risk from future insects, disease, and wildfires. Improvement cutting, commercial thinning, and/or underburning would partially replicate the effects and conditions of

natural disturbance processes, which are chiefly wildfire and pathogens (insects and disease); and therefore would partially restore characteristic stand structure, composition and function (Ibid p. 26).

Under Alternative 2, improvement cutting would provide direct enhancement or recruitment of “species-at-risk” (e.g., ponderosa pine and western larch). Because these treatments would favor these species over others, they would improve the presence, health, vigor and reproductive capability of existing species-at-risk. Additional timber harvesting operations could damage conifer regeneration in skid trails and landings while at the same time creating bare soils or reduced duff conditions favorable to seral species’ (e.g., ponderosa pine and western larch) seed germination and growth (Ibid p. 26).

Average tree size would increase in areas proposed for improvement cutting under Alternative 2. The presence of large trees, or stands of large average diameter is important from many aspects, particularly regarding social values including aesthetics, and foraging and nesting habitat for goshawk, pileated woodpecker, and flammulated owl, and a host of ecological functions and resiliency. The proposed treatments would employ thinning from below and crown thinning to reduce the stocking of smaller excess trees while retaining larger trees. Slashing non-commercial understory ladder fuels (i.e., live trees under 3 inches dbh) would further contribute to increasing stand diameter (Ibid p. 27).

Alternative 2 would also provide direct recruitment of future old-growth forests and enhancement of existing old growth forests through understory slashing, underburning, and proposed harvest activities. As described in Table 6 Resource Protection Measure #23, all existing old-growth trees would be retained. Approximately 44 percent of four stands allocated as MA 21 old-growth (140 acres out of 315 acres) would be improvement cut to reduce the risk of wildfire and bark beetle risk and to promote vigor of old growth trees. An additional 26 acres of understory slashing and underburning would occur in MA21. Treatments are designed to restore historic conditions as supported by research (Arno et al 1997) of Seeley Lake old growth stands. The treatments would be consistent with MA21 goals and objectives as well as meeting Forest Plan standard #4 under MA21. One old growth stand (61204007) not allocated to MA21 would be treated with improvement cutting, as previously described (Ibid p. 27-28).

In the Mountain Creek treatment area, group tree selection cutting and variable retention harvests would provide for additional diversity of structure, composition, and function in treatment units within fire group 4 (VRU2). These areas are presently lacking in these attributes due to the extensive homogenous area of the ponderosa pine plantation which is at high risk of mountain pine beetle predation (Ibid p. 28).

The proposed action includes mechanical fuel treatments on approximately 371 acres, with all but 102 acres of that occurring in combination with underburning. Sites with mechanical fuel treatment appear to have more dramatically reduced fire severity compared to sites with prescribed fire only. Forest with much lower density and larger trees have less continuous crown and ladder fuels, higher crowns off the ground, and thicker bark resulting in lower potential for crown fire initiation and spread and for less severe fire effects (Pollet 1999). The reduction of crown fuels outweighs any reduction in surface fire hazard because crown fire spread is dependent on the abundance and horizontal continuity of canopy fuels (Omi 2001) (Ibid p. 28).

Ecological sustainability requires the restoration of process as well as structure (Stephenson 1999, Arno 1996). Fire regimes and stand structures interact and must be restored in an integrated way. Fire alone may be too imprecise or unsafe in many settings, so a combination of treatments may

often be the safest and most certain restoration approach (Allen 2002). A recent wildland-urban interface fuel reduction study (Scott 1998) conducted on the Ninemile Ranger District of the Lolo NF to compare thinning treatments found the most effective treatment was a thinning from below followed with prescribed fire. The study also found that periodic application of the treatment would lead to an open-structured forest of large trees of high aesthetic value (Ibid p. 29).

Alternative 2 – Proposed Action - Cumulative Effects (Ibid p. 29)

Openings exceeding 40 acres could possibly result from salvage harvests of bark beetle-caused tree mortality within the proposed harvest units if the mortality rate continues. Salvage harvesting of dead sawlog-sized trees is a component of the improvement cutting prescriptions, however residual stocking levels are also included. The silvicultural prescriptions and resource protection measures call for retaining dead trees if insufficient live trees exist for meeting the residual stocking levels. Openings are highly unlikely where mixed conifer stands are treated due to the presence of non-host species conifers, and the low levels of Douglas-fir beetle activity. The Mountain Creek treatment area is the most likely possibility for treated areas exceeding 40 acres in size. Any openings resulting from bark beetle-caused mortality and salvage harvests, or prescribed fire, would be planted to ensure a diverse species mix which includes western larch. Post-treatment reforestation monitoring would track the success or failure of regeneration to meet land management objectives.

Fire and Fuels

This information is summarized from the Fire and Fuels Report which is available on the Lolo National Forest web site. Specific resource protection measures related to fire and fuels are described in Table 6.

Environmental Consequences

BehavePlus 3.0.2. Fire Modeling System was used to predict the effects of the proposed treatments on fire and fuels. (Ibid p. 5) The existing condition for fuels in the Auggie project area is primarily represented by Fuel Model 8 (Ibid p. 14).

No Action Alternative – Direct, Indirect, and Cumulative Effects (Fire and Fuels Report p. 20)

Under the No Action Alternative Fuel Model 8 areas are likely to transition to Fuel Model 10 conditions resulting in an increasing potential for severe wildfire behavior. Wildfires in Fuel Model 10 tend to be at the upper limit of control by direct attack. With increased winds and drier conditions, torching crowning, and spotting is more frequent in this fuel situation making a large high intensity wildfire more likely (Anderson, 1982) (Ibid p. 18).

There would be an overall continuing decline in forest health due to unnatural excess biomass and a long-term absence of beneficial fire effects. Under hot dry summer conditions the effect of the No Action Alternative would be an increasing likelihood of severe wildfire behavior. A new fire start would likely initially spread as a surface fire. Torching and crowning would be progressively probable. There would be an increasing likelihood of crown fire development and sustained crown fire spread with each fire season. The No Action Alternative would cumulatively counteract the recent fuel mitigation to the west and south of the Auggie Project area, offsetting lower wildfire severity effects. The potential for high wildfire smoke impacts would increase. There would be increasing risk from wildfire to firefighters and the public. Fire

suppression cost would likely increase as tactical efficiency and effectiveness declines. The No Action Alternative would decrease fire protection capabilities on lands adjacent to the project area. It is also probable that a wildfire generated inside the project area would threaten the town of Seeley Lake and residences adjacent to the project boundary.

Alternative 2 - Direct and Indirect Effects

Fuel Condition / Fire Behavior

The vegetation treatments proposed in Alternative 2 would change the overall severity and intensity of a future wildland fire (Ibid p. 21) by generating a change from Fuel Model 8 to Fuel Model 11. Without these treatments the stands would change from Fuel Model 8 to Fuel Model 10, which is the anticipated condition in the near future (No Action). These treatments would reduce future wildfire severity as modeled by Fuel Model 10, but there would be increased wildfire intensity potential from current Fuel Model 8. Given hot dry summer conditions, the proposed treatments would affect wildfire behavior by increasing surface fire spread over the majority of the harvest unit areas. Isolated pockets of torching could occur but it is highly likely a fire would remain a surface fire. There would be a greatly reduced likelihood of crown fire development and sustained crown fire spread. Future wildfire events may exhibit increased rates of spread and increased flame lengths, but treatment with prescribed fire or thinning with fuel removal generally keeps fire from moving into tree crowns which reduces fire damage and makes fire suppression more effective (Scott, 1998) (Ibid p. 21).

Wildland-Urban Interface (WUI) (Ibid p. 24)

Implementing Alternative 2 would reduce the risk of sustained high intensity wildfire in the WUI. One comment letter on the proposed Auggie Project focused on the fuels management component of the project and disagreed with the effectiveness of fuel reduction treatments outside areas greater than 120 feet from structures. The comment letter's author cited Cohen (1999) which indicates that thinning vegetation within 40 meters of structures reduces the likelihood of structure ignition from intense flame fronts, and that it is ultimately the homeowner's responsibility to reduce the ignitability of their homes. While providing an additional measure of protection to homes from wildfires would be a beneficial outcome of this proposed project, it is not the driving purpose. However, by creating a larger area of reduced fuels, the risk of a crown fire is reduced. The proposed treatments would create an environment where fire would be more likely to remain on the forest floor and be easier for firefighters to suppress. As stated by Cohen (1999), "reducing the fuel loadings, fuel continuity, and the availability of ladder fuels (on both national forest and private lands) would keep fire confined to the ground, reduce fire intensity, reduce firebrands and afford a high probability of control through the use of engines, hand crews and air tactical resources. To reduce the threat of ignition from firebrands, fuels need to be reduced both near and at some distance from the structure. Firebrands that result in ignitions can originate from wildland fires that are a distance of 1 kilometer or more." "A structure may ignite directly from firebrands that have come from an intense wildland fire at over ½ mile away (Cohen 2003)."

Cumulative Effects (Ibid p. 24-25)

The Action Alternative would promote forest health, distribute beneficial fire effects, and reduce the risk from wildfire to firefighters and the public. National Forest System lands, adjacent WUI, Plum Creek Timber lands, and State of Montana lands would be positively affected due to a

reduced likelihood for large-scale severe wildfires by facilitating a shift from stand-replacement severity towards low-to-mixed wildfire severity.

Fire suppression cost would likely decrease as tactical efficiency and effectiveness would improve. This treatment would align with the other similar Forest Service treatments along the Highway 83 corridor and around the town of Seeley Lake. The Seeley Fuels project, which focused north of town and primarily on the east side of Highway 83, reduced ladder fuels, crown bulk density, increased crown spacing, and reduced ground fuels. The Chain of Lakes project was similar in treatment except it focused primarily west of Highway 83. Previous Forest Service treatments have created old clearcuts with dense young stands within the treatment area; these areas are included in the proposed action, others are scattered around in the landscape. These dense young stands can have a variety of different fire effects if a wildfire occurs (everything from a heat sink to a stand-replacement event). Other Forest Service treatments have also had a variety of different effects in regard to the stand differentiation, some are dense monoculture others are open multi-species.

Past fires have had an effect on the whole valley and they will probably continue in the future. Most recently the Jocko Lakes fire has increased the awareness of people in the community that more work needs to be done on both private and public lands. Many small private land owners have taken the initiative to do work on their own or through contract resources. Other groups and individuals have taken the initiative to help others identify the need and help find funding and contractors to do the work.

Air Quality

This information is summarized from the Air Quality Report which is available on the Lolo National Forest web site. Specific resource protection measures related to air quality are described in Table 6.

Environmental Consequences

No Action Alternative

Direct and Indirect Effects (Air Quality Report p. 10)

No prescribed burning would occur under the No Action Alternative. Fuels created by natural mortality would fall over time and remain on site until natural decomposition takes place or a wildfire occurs in the project area. Impacts from dust, vehicle emissions, and other sources would not change from current conditions.

This alternative would have no immediate direct adverse effects on air quality. If a wildfire were to occur, the potential indirect effects include degraded air quality and reduced visibility. Existing and continued mortality and fuel accumulations would contribute to increased fire intensities and severities. Consumption of the increased fuel loads and understory biomass would increase the amount of smoke emissions. In fact, emissions from wildfire are typically twice those of a prescribed fire on the same acreage due to a greater emission factor (Ottmar 2001), fuel consumption, and fire intensity. These emissions would also occur over a period of a few days to several weeks as opposed to intermittent days over several years for a prescribed fire project.

Cumulative Effects (Ibid p.12)

There would be no cumulative effects to air quality caused by management activities under the No Action Alternative since no new burning activities would be proposed and effects to air quality are usually episodic and of short duration. A large wildfire in the area can not be predicted so it is not reasonably foreseeable. Fire suppression will continue to occur under both alternatives.

If a wildfire occurred, there is a potential for the National Ambient Air Quality Standards to be exceeded depending on the size and duration of the wildfire. If a large wildfire were to occur, the Forest Service and the State of Montana Air Quality Bureau could, depending on the specific situation, restrict all regulated burning. However, effects of smoke from a large wildfire could become cumulative with present and foreseeable activities or combined with unregulated pollutants in the area, such as dust from roads.

Alternative 2

Direct and Indirect Effects

Alternative 2 would have limited immediate adverse effects on air quality resulting from dust, prescribed pile and underburning, and jackpot burning. These impacts would be temporary, transient, and within established federal thresholds.

Direct short-term impacts from dust may be created by loading and processing activities at landing sites and truck transportation of material. These activities are not anticipated to result in significant impacts to regional air quality because of the transitory nature of fugitive dust and the fact that some of the harvesting would be done in winter (Ibid p. 12).

Prescribed pile and understory burning and jackpot burning could produce some smoky days in the local area. These activities may also result in the form of nuisance smoke, smell or haze under the worst-case scenario.

Within the Mountain Creek treatment area approximately 44 acres of prescribed understory burning is proposed as well as an estimated 20 landing piles. Within the Auggie Creek treatment area approximately 819 acres of prescribed understory burning and an estimated 20 landing piles are proposed. About 400 acres of the 863 understory burning acres would be a jackpot burn, in which only concentrations of fuel would be burned. It's anticipated that approximately thirty but no more than sixty percent of these jackpot areas would receive an initial treatment with prescribed fire.

Modeling indicates the PM 2.5 concentrations emitted from prescribed burning in the project area would be minimal and confined to the project area dropping off significantly in most cases less than 1 mile down wind. Modeled 24-hour maximum PM 2.5 concentrations emitted from landing pile burning and prescribed underburning range from 0.94 to 24.94 µg/m³ within 0.1 mile downwind from the project area. This is below the 35 µg/m³ threshold. Modeling also shows there would be no significant impacts to any other Class 1 Airshed resulting from this project. (Ibid p. 15)

The biomass removed and subsequent prescribed fire treatment as a result of implementing Alternative 2 compared to a wildfire under current conditions equates to an averaged 117% reduction of PM 2.5 emissions that would potentially impact the local and surrounding Airshed.

Cumulative Effects (Ibid p. 15 – 16)

Cumulative effects on air quality of smoke from burning piles, produced as a result of the implementation of Alternative 2, would result in an incremental decrease in air quality as PM_{2.5} particles from this source combined with other particles produced both by the implementation of other aspects of this project (specifically fugitive road dust) as well as other local and regional sources located upwind. Prescribed burning of logging slash, on other federal, state, or private lands, would also contribute particulates, as would agricultural burning and fugitive dust from tilled ground. Particulates from industrial and automotive sources also contribute to regional particulate loading. Other vehicle traffic, agricultural, and industrial sources within the analysis area would also contribute to the cumulative particulate loading. It is not possible to predict the amount of particulates contributed by these other sources.

There may be days when regional air quality does not meet the established standards but, because of the Montana/Idaho Smoke Monitoring Unit's effectiveness at limiting the amount of burning in any given day, there is reduced likelihood that any source associated with this project or any other present or reasonably foreseeable future burning project, would be a significant contributor. If these safeguards failed, and air quality did not meet the established standards all burning would stop (Table 6 Resource Protection Measures #54) so the duration of exceeding would be minimal. This would not be the case in a wildfire situation.

The cumulative effect on Class 1 Airsheds from the implementation of Alternative 2 and other present and reasonably foreseeable future actions is not known at this time. The production of air pollutants associated with the implementation of this project would vary over time and would not be continuous. Impacts would be intermittent in nature and the potential for occurrence would end when the implementation of this project was completed.

Heritage Resources

This information is summarized from the Heritage Report which is available on the Lolo National Forest web site. Specific resource protection measures related to heritage resources are described in Table 6.

Environmental Consequences (Heritage Report p. 3-4)

No Action

No direct, indirect, or cumulative effects are expected with the No Action Alternative.

Proposed Action

One cultural site, Site 24MO0127 (Big Blackfoot Mining and Milling Co. Logging Camp), is located in an area of the project where precommercial thinning and prescribed burning is proposed. This heritage resource would be protected against adverse effects by placing a 50-meter no treatment buffer around the site (Table 6 Resource Protection Measure #56). Because no new cultural resources have been revealed within the project area by literature search, tribal and state preservation office consultation, and field surveys, it is believed implementing the proposed action would have no potential adverse effects to cultural resources.

A timber sale contract provision for protection of heritage resources would be included in the timber sale contract to ensure protection of heritage sites should any new ones be located during project implementation (Table 6 Resource Protection Measure #55).

Transportation

This information is summarized from the Transportation Report which is available on the Lolo National Forest web site.

Environmental Consequences

Alternative 1 (No Action) - Direct, Indirect, and Cumulative Effects

(Transportation Report p. 11)

There would be no change in the management of the road system therefore the implementation of this alternative would have no effect on the existing condition of the transportation system.

No roads would be decommissioned or placed in storage; consequently, there would be no change in the existing condition of non-system roads that aren't being maintained in the project area. Resource degradation would continue to occur as a result of this condition. The existing mitigation features on system roads designed to reduce road related sediment production and delivery would prevent some sediment transfer to adjacent streams but road generated sediment would continue to degrade the aquatic resources. Road crossings at streams that are critical fish habitat would continue to impede fish passage and would not pass 100-year flood events.

Alternative 2 - Direct, Indirect, and Cumulative Effects (see Map 1) (Ibid p. 12)

Implementing Alternative 2 would lead to a reasonable improvement in existing resource conditions that are currently negatively impacted while providing adequate Forest Access.

Under Alternative 2, proposed commercial timber treatments would require road access provided by the existing road system as well as some limited new temporary and short-term road development. In addition to this road utilization, several trails in the Auggie Creek treatment area would be used as short-term roads to access specific timber treatment areas in the proposed project. Reconstruction would be required on some of these trails to make them suitable for log truck hauling. This reconstruction would be compatible with the long-term recreational use of these trails. In conjunction with this road and trail use for timber hauling, mitigation would be applied to the existing project roads and trails used as roads (including maintenance and BMPs) as well as any new project roads to reduce potential near-term and long-term road related resource impacts (Table 6 Resource Protection Measure #s 29-32 and 37-40). On these existing facilities this would result in a reduction in sediment delivery compared to present conditions. A road management plan would be implemented for the project area that would decommission or store roads to reduce overall road densities and to provide interim mitigation for National Forest System roads that may be used in the near future. As a result of this road management plan, some existing non-system roads would become National Forest System roads (about 1.46 miles) while other roads would be decommissioned (about 0.6 miles). Road storage on project roads would be implemented with funds generated from the proposed timber sale (about 1.8 miles). The proposed road decommissioning of non-system roads not used for project access would not require funding since these roads have been sufficiently mitigated through natural processes. Fish passage in the analysis area would be improved by replacing two culverts on NFSR 477 that are presently an impediment to the movement of fish in critical habitat at Trail Creek and Swamp Creek. These structures would not be replaced under the timber sale but would be replaced when separate funding became available.

Economics

This information is summarized from the Economic Report which is available on the Lolo National Forest web site.

Environmental Consequences

Alternative 1 (No Action) – Direct, Indirect, and Cumulative Effects

If no action was taken there would be no direct or indirect effects on the local economy.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Alternative 2 would contribute 37 full-time jobs and \$1.17 million of labor income on the economic impact area (Economic Report p. 5). Implementation of Alternative 2 would be financially feasible however it is not financially efficient in the current economic climate, so it would require additional funds to implement all of the activities included (Ibid p. 4). Alternative 2 would not likely adversely affect minority or low-income populations (Ibid p. 7).

Cumulative Effects

The financial efficiency of the project would not be affected by the past, present, or reasonable foreseeable future actions in the project area. Other projects occurring in the economic impact area will have cumulative economic impacts. Many activities listed in Appendix D have the potential to contribute cumulatively to jobs and labor income provided by implementing Alternative 2.